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Social Skills: Virtual vs. Real. The Impact of Technology

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Abstract

Social skills are necessary to get along with others, create and maintain satisfying relationships and to adjust our behavior to fit a particular situation and our personal needs and desires. These abilities, "Social skills" are in a very need to our senses (see, hear, smell, touch and taste) within three processes: seeing, thinking and act in real life.

No doubt that technology is already deeply involved in every aspect of our lives, not only jobs, financial, services and more, but also our social life. It has the potential to negatively affect our social skills and even harm our social life because of the large gap between real life and virtual activities.

This paper aims to expose and discuss theoretical arguments and findings of research regarding impact of technology on social life. To what extent do technology use can negatively affect our social skills and social life (to be distracted, overly stressed, ability to communicate, cheating, divorce and other social phenomena as raised by Human Kinetics in his book "Dimensions of Leisure for life"). Susan Greenfield, a British neuroscientist studied the impact of technology on people said: "Technology puts you in a box", it limits our thinking, imaginations and actions. Technology makes significant alterations in our brains such as reducing levels of dopamine in the pre-frontal cortex which is associated with executive functioning such as self-control, attention, abstract thinking, planning and decision making.

Keywords

Social skills, technology, destructive

Challenging Obstacles to the Participation of Indigenous Bedouin-Arab Women in Israeli Higher Education

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Purpose: Negev Bedouin Palestinian Arabs underwent widespread displacement and the destruction of their agro-pastoral economy after Israel's establishment. These changes required a re-making of the Bedouin woman's role in the life of the community. We explored the potential of mainstream higher education in this process among female Bedouin university students.

Methods: Questionnaires and in-depth interviews were conducted among Bedouin women studying at the Negev's main regional university.

Findings: Academic preparation, psychometric testing and financial barriers represented major obstacles for the students. Bedouin Arab schools provided inadequate preparation in Hebrew and English languages, and higher-order analytical thinking and writing skills. Bedouin women worked harder to acquire these skills in their first years, and took longer to complete their degrees. Culturally-biased psychometric testing determined field of study, often barring women from the field of their interest. Women, however, questioned the validity of the exam, rather than their own abilities; but still lacked the power to overcome the barriers it placed on their field of study choice. High tuition was another burden in this low socio-economic status community; however, families sacrificed to support their daughters, who were pro-active in seeking scholarship/earning opportunities. Finally, traditional socio-cultural norms presented another obstacle that differed across spectrum of students. Women dealt with this obstacle in different ways, often calling upon Islamic principles that ensured the right and responsibility of women to obtain education.

Conclusion: Bedouin Arab women in higher education demonstrated resilience and agency in overcoming socio-economic barriers and actively participated in modernizing Bedouin traditions.

The Future of Emotional Support for School Population in the Digital Era

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Abstract

Children encounter various difficulties during their daily routines (e.g. social problems, learning difficulties). Those difficulties occupy their thoughts and affect their emotional well-being, thus depleting their energy and focus and influencing their social adjustment and academic performance. Those problems require their teachers', counselors', and principals' attention and intervention.

Many times, children do not share their worries with an adult. Consequently, children are usually alone in their struggle to solve the troubling situation. Educational and school psychologists as well as school counsellors, are in a position to help children. However due to work-overload, limited presence within the school, and difficulty that children encounter in reaching those professionals, these options are limited.¹

We propose that technology, can bridge this gap. Technology presents an innovative way of consuming emotional support services. Children are "natives" in the land of technology, and by using technology we can allow children to get help in a familiar and comfortable way. Subsequently, children might adjust better and have higher scholastic achievements.

We shall present a glimpse to the future of mental health services, and review various technological solutions, that are already being used. Digital emotional support to children can be achieved by simple means as providing information relevant to various problems, and by more elaborated means as on-line therapy.² We have demonstrated the viability of the digital channel for emotional support to children, by using an internet forum during an emergency exercise in Israel.³

Keywords

Emotional support, digital, on-line, Internet, innovative

¹ Mansbach-Kleinfeld, I., Farbstein, I., Levinson, D., Apter, A., Erhard, R., Palti, H., Geraisy, N., Brent, D. A., Ponizovsky, A., M, & Levav, I. (2010). Service use for mental disorders and unmet needs: Results from the Israel survey on mental health among adolescents. *Psychiatric Services*, *61*(3), 241-249.

² Naser, S., Nunn, A., Alkalay, S., & Dolev, A. Technology and the future of education; School psychologists supporting child rights through effective use of technology. In: B. K. Nastasi, S. N. Hart, & S. N. *International Handbook on Child Rights in School Psychology*. Springer. (Submitted manuscript).

³ Dolev, A., Alkalay, S., & Maital, S. L. (2014). Reaching out via the web: Use of internet-based counseling services in a crisis simulation exercise in Israel. Lecture given at a symposium at the 36th annual conference of International School Psychology Association. Kaunas, Lithuania.

An Exploratory Study of the Social Exchange Between Citizens in Context of a Social Contract to Pay Your Taxes

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Abstract

South Africa is a developing country with high levels of inequality, where only a small percentage of registered taxpayers contribute to the bulk of annual fiscal revenue. Citizens of South Africa seem to be unconcerned that fiscal revenue is a scarce resource that has to provide for a burgeoning demand for services provided by government in a period of low economic growth. The purpose of this study is to explore social exchange between citizens, in context of the social contract sciences, in order to enhance compliance and awareness to pay their taxes. Social exchange between citizens is seen as 'what everybody knows' about their own morals, values and beliefs. In equity theory, social exchange between citizens may be positively influenced if there is a perception that everybody is treated fair and equal. In this study a qualitative exploratory research approach, in the form of an Interactive Qualitative Analysis research methodology, will be used to collect, analyze and interpret data on citizens' attitude towards paying their taxes to government, if they know that their fellow citizens do so. Based on the principles of reciprocal obligation, trust between citizens and Homans's rationality theory, social exchange between citizens will be explored. Knowledge of the social exchange between citizens that may affect tax compliance behavior, may be used as a foundation in attitude and perception surveys. Improved data on citizens' morals, values and beliefs on the payment of tax, may be used by the fiscal authorities to launch tax literacy campaigns.

Keywords

Social exchange, social contract, compliance, interactive qualitative analysis, tax literacy

Teaching and Learning Science in Secondary Education in Spain: A Curricular Delphi Study

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Abstract

Numerous authors have agreed on the importance of improving and intensifying scientific culture in society in general, and more particularly among the students before university. It is known that scientific competence in secondary school students plays a very important role both in intellectual development and in its various applications for everyday life. However, the last PISA evaluations taken place in 2015 show that the degree of competence in science of the secondary students in Spain is low. However, it is difficult to unravel what fails in educational practice as well as what are the topics of a good culture and science education. For this reason, it is a matter of greater concern at this educational level to know how the students should be trained in science.

This study is focus to find the clues for the scientific training of students to achieve the relevant level of competence in science. Through the use of the Delphi technique, taking place in three rounds, we collect the views of more than one hundred individuals belonging to the different groups related to the field of science and teaching. From the cluster analysis which has been taken place in the second round, a set of five concepts or ideas has been found. Later on, from the third round, we found that one of these five concepts seems very important for the four groups of stakeholders, which is Concept E: *Science related with the interest to preserve the Earth and human health.*

Keywords

Science education, secondary school, curricular study, Delphi method

Use of WeChat for Teaching and Learning: An Empirical Study of Its Impacts

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Abstract

Although WeChat has recently spawned significant resolutions in technology-mediated social contact and interpersonal communication, the research regarding the use of WeChat for educational purpose as well as the impacts of this newly emerging technology is relatively few. The primary purpose of this empirical research is to unearth whether and how the interaction between students and their instructors via the use of WeChat could enhance the students' sense of need fulfilling and subjective well-being by concentrating on student-faculty bridging relationships and bonding relationships. Using web-based data of 200 Chinese subjects, the Structural Equation Modeling (SEM) analysis reveals that the time spent on WeChat significantly and directly impacts users' subjective sense of need fulfilling as well as their perceived well-being. Additionally, the obtained results demonstrate that the quality of communication via WeChat, for instance, the timeliness of instructors' responses, the content of their responses, the frequencies of the contacts made, etc. helped with bridging and bonding relationships, which are all significant predictors to subjective well-being outcome. Furthermore, the perceptions of social integration and social capital could play the crucial mediating roles in the connection between WeChat use and the dependent variable of subjective well-being. Therefore, these outcomes may shed light on a more nuanced comprehending of the influence of the new social media interaction between students and instructors for educational purposes, as well as the overall teaching and learning quality in the digital age.

Feasibility of Cooperative Learning at Spain's Universities: A Methodological Review for Innovative Implementation Proposals

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Abstract

During the last few years, as a result of recent reforms applied on University Studies in Spain, Professor's active participation on the development of innovative projects has been greatly promoted and demanded in order to contribute on the improvement on the quality of education, according to Degrees belonging to European Higher Education Area. Spain's implementation of Bologna Plan on 2010 brought the adaptation and unification of new educational criteria on European Universities, although it also led to controversial discussion on different sectors of Education. This new system fosters an active learning throughout modalities with a practical vision which encourage teamwork on the European Credit Transfer System frame. The question on how to adapt hours and credits to the new plan, as well as how to consider student's attendance in order to promote a continuous and individual evaluation is still a controversial matter for students and professors.

This new context requires scheduling, action and critical reflection by professors, since they would have to update resources and methodologies in order to promote motivational learning, as well as to develop new abilities for student's labor integration. To achieve this goal, we introduce a revision and adaptation of the cooperative methodology. It represents a well-structured alternative for its implementation, and comes from previous analysis of course plannings, the role for professors and new methodological and evaluative strategies. Besides, we will also show the results of a local educational project we performed on the Art History Undergraduate Degree at the University of Oviedo.

Keywords

University education, globalization of higher education, learning and teaching methodologies, cooperative learning

Teaching Students from Social Groups in Conflict

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A commonly held underline assumption is that learning groups in educational institutions share similar background. However, ethnic and racial diversity at nursing schools in most Western countries have substantially increased in the last decade, creating a challenging learning environment for both learners and teachers. Tensions between these students can often lead to distancing and hostility. The formation of joint, in-class discussion groups is one method for coping with this challenge.

The current research focused on Arab and Jewish nursing students who participated in joint, Jewish-Arab discussion groups about the Jewish-Arab conflict as part of their academic studies. Arieli and Friedman (2013) found that students objected to such discussion groups, stating there is nothing to discuss because no conflict exists. This contention belied the students' social reality in which the groups remained distant from each other.

The current study aims at understanding the dissonance between the students' declaration and their social reality. The study found that in the joint, discussion group setting within the confines of the academic institution the students perceived members of the other group in a positive light and were willing to work together. In contrast, outside the common academic environment, they saw the members of the other group in a negative light.

These findings are important when planning courses of study geared to reducing the level of conflict between students from different social groups. The findings are also relevant to educational settings in which students from disparate social groups study together.

Keywords

Teaching, academic settings, students from disparate social groups, social groups in conflict, teaching challenges

A Content Analysis on Articles Related to English (L2) Pronunciation Teaching

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Abstract

This study aimed at analyzing the articles related to English (L2) pronunciation teaching written between 2012 and 2017. To achieve this purpose, 106 articles related to English (L2) pronunciation teaching published in fourteen well-known international journals in the field of foreign language learning and teaching were examined. These fourteen international journals were indexed by SSCI (f=7), ERIC (f=4), EBSCO (f=2) and MLA (f=1) databases in international platforms. These 106 articles related to English (L2) pronunciation teaching were analyzed in terms of research type, research topic, target population, sample selection method, sample size, research method, data collection method, language of articles, year of publication, authors, number of references, and most frequently used keywords. The results displayed the general scope of research studies with respect to English (L2) pronunciation teaching in international contexts.

Keywords

English (L2), pronunciation, teaching, content analysis, pronunciation teaching

A Study on English Language Teachers' Perceptions on Their Lifelong Learning Competencies

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Abstract

This paper aimed to investigate English language teachers' perceptions on their lifelong learning competencies. The participants were randomly selected 40 EFL teachers from the Foreign Languages Schools of three different state universities located in the west part of Turkey. Data were collected via lifelong learning competency scale developed by Sahin, Akbasli and Yelken (2010). The collected data were analyzed by Anova and independent samples t-test. Semi-structured interviews with 5 teachers were also conducted to further investigate the issues with respect to their perceptions on lifelong learning competencies. The results of the study revealed that English language teachers' perceptions on their lifelong learning competencies were high and that their perceptions differed as regards age and teaching experience. However, the results of the study also indicated that English language teachers' perceptions on their lifelong learning competencies did not differ as regards gender and department. Lastly, it was found in the study that English language teachers felt most competent in the field of communication in native language despite feeling least competent in the field of mathematics.

Keywords

Lifelong learning, EFL teachers, teacher competency

1. Introduction

Lifelong learning (LLL) is the continuous improvement of knowledge, skills and competence from birth to death (Green, 2002). It involves all learning from initial childhood education and primary school education to secondary education and higher education in our senior years (Mayo, 2007). The European Commission defines lifelong learning as 'all purposeful learning activity undertaken throughout life with the aim of improving knowledge, skills and competencies within a personal, civic, social and/or employment-related perspective' (2001: 9). Since it is not always possible to present all the necessary knowledge and skills at formal contexts such as school, college and university, people need to continue their own learning in a variety of contexts throughout their lifetimes to cope with the problems that they experience and to take part in a process of constant professional enhancement (Sharples, 2000).

In English language teaching profession, teachers should possess a variety of competencies such as linguistic competency, methodological competency, intercultural communicative competency, ICT competency and professional development competency. The Ministry of National Education (MoNE) in Turkey specified competencies for English teachers under five basic categories, namely (1) *planning and organizing English teaching procedures*, (2) *improving language skills*, (3) *monitoring and evaluating language development*, (4) *school-family and society collaboration*, (5) *improving professional skills in English teaching* (Atmaca, 2017). In addition to these five basic competencies for EFL teachers, EFL teachers should also have *lifelong learning competency*. EFL teachers as lifelong learners should have organizational skills, communication skills, learning skills, teamwork skills. They should be open to what is new in their area of expertise. They should be curious, creative and innovative (Demiralay & Karadeniz, 2008; Titrek, Gunes & Sezen, 2013; Uzunboylu & Selcuk, 2016).

In recent years, numerous studies have been done on prospective teachers' lifelong learning tendencies. However, in-service EFL teachers' lifelong learning tendencies have not been investigated by researchers. Hence, this study attempted to investigate in-service English language teachers' perceptions on their lifelong learning competencies according to some teacher variables (e.g. age, gender, department and teaching experience). The research questions were as follows:

- 1) What is the level of EFL teachers' perceptions on their lifelong learning competencies?
- 2) Do EFL teachers' perceptions on their lifelong learning competencies differ according to their age?
- 3) Do EFL teachers' perceptions on their lifelong learning competencies differ according to their gender?
- 4) Do EFL teachers' perceptions on their lifelong learning competencies differ according to their department?
- 5) Do EFL teachers' perceptions on their lifelong learning competencies differ according to their teaching experience?

2. Literature Review

In the literature, researchers investigated teachers' levels of perceptions on their lifelong learning competencies. Many researchers (e.g., Ozcan, 2011; Izci & Koc, 2012; Sahin & Arcagök, 2014; Pilli, Sonmezler & Goktan, 2017) found that teachers had high levels of perceptions on their lifelong learning competencies.

Researchers investigated the effect of age on teachers' perceptions on their lifelong learning competencies. While some researchers (e.g. Uzunboylu & Hursen, 2013) found that younger teachers' perceptions regarding lifelong learning competencies were higher than older teachers' perceptions regarding lifelong learning competencies, other researchers (Yilmaz, 2018) unearthed that older

teachers' perceptions regarding lifelong learning competencies were higher than younger teachers' perceptions regarding lifelong learning competencies.

Related to the effect of gender on teachers' perceptions on their lifelong learning competencies, while some researchers (Kiliç, 2014; Cetin & Cetin, 2017) revealed that female teachers' perceptions regarding lifelong learning competencies were higher than male teachers' perceptions regarding lifelong learning competencies, other researchers (Yildirim, 2015; Ayaz, 2016) found that gender did not have any effect on teachers' perceptions on their lifelong learning competencies.

Relevant to the impact of department on teachers' perceptions on their lifelong learning competencies, while some researchers (Oral & Yazar, 2015; Yilmaz, 2018) indicated that teachers' perceptions on their lifelong learning competencies did not change based on the departments being studied at, other researchers (Sahin et al., 2010; Savuran, 2014) found that department had a significant effect on teachers' perceptions on their lifelong learning competencies.

With respect to the effect of teaching experience on teachers' perceptions on their lifelong learning competencies, some researchers (Bozat, Bozat & Hürsen, 2014) indicated that novice teachers had higher level of lifelong learning perceptions than other experienced teachers.

3. Methodology

3.1. Participants

The participants were randomly selected 40 EFL teachers from the Foreign Languages Schools of three different state universities located in the west part of Turkey. The demographic features of the participants are displayed in Table 1.

Table 1: Demographics of the EFL Teachers (n=40)

Variable	Level of Variable	N	%
Age	30<	12	30
	30-39	22	55
	40-40>	6	15
Gender	Female	29	72.5
	Male	11	27.5
Graduated Department	English Language Teaching	23	57.5
	English Language and Literature	8	20
	American Culture and Literature	2	5
	English Linguistics	2	5
	Translation and Interpretation	5	12.5
Teaching Experience	1-5 Years	13	32.5
	6-10 Years	17	42.5
	11-11+ Years	10	25

3.2. Instrument and data collection

The data for this study were collected by utilizing *lifelong learning competency scale (LLCS)* developed by Sahin et al. (2010). The questionnaire was made up of two parts. The first part asked about personal information such as age, gender, department and teaching experience. The second part of the questionnaire had twenty-three items assessing EFL teachers' perceptions on their lifelong learning

competencies in the form of eight subscales, (1) *communicative competence at native language* (4 items), (2) *communicative competence at a foreign language/s* (4 items), (3) *mathematical basis competence at science and technology* (3 items), (4) *digital competence* (2 items), (5) *the competence of learning to learn* (2 items), (6) *the competence of social citizenship awareness* (3 items), (7) *the competence of the sense of initiative and entrepreneurship* (4 items) and (8) *the competence of cultural awareness and expression* (1 item). The participants expressed their levels of lifelong learning competency from 1 (grossly inadequate) to 5 (very adequate). While the internal consistency of the original scale was $\alpha = .75$, the internal consistency of the scale for the present study was $\alpha = .95$.

After getting permission from school directors, the questionnaires were given to randomly selected EFL teachers (N=40) who taught English as a foreign language to students at the Foreign Languages Schools of three different state universities located in the west part of Turkey. The questionnaires were completed by EFL teachers in their regular classroom hours and it took them about 10 minutes to fill out the questionnaire.

3.3. Data analysis

In this study, the Statistical Package for the Social Sciences (SPSS, version 16.0) was used for statistical analysis. Descriptive statistics were utilized to indicate the participants' demographic features and their lifelong learning competencies. A series of independent samples t-tests and one-way ANOVA were used to investigate the effects of teacher variables such as age, gender, department and teaching experience on EFL teachers' lifelong learning competencies. Semi-structured interviews with 5 teachers were also conducted to further investigate the issues with respect to their perceptions on lifelong learning competencies.

4. Results and Discussion

4.1. EFL teachers' scores on questionnaire

Overall, EFL teachers who taught English as a foreign language to students at the Foreign Languages Schools of three different state universities had high levels of perceptions on their lifelong learning competencies ($M=4.20$; $SD=.65$). These results were in line with those of Sahin and Arcagök (2014) who indicated that teachers had high levels of perceptions on their lifelong learning competencies. According to findings, EFL teachers feel that they are most competent in communication in their native language ($M=4.67$; $SD=.61$) and least competent in their mathematical basis competence at science and technology ($M=3.93$; $SD=.80$). Table 2 below shows EFL teachers' perceptions on their lifelong learning competencies.

Table 2: EFL teachers' perceptions on their lifelong learning competencies (n=40)

Subscale	Min.	Max.	M	SD
1	2.75	5.00	4.67	0.61
2	2.75	5.00	4.46	0.66
3	2.00	5.00	3.93	0.80
4	2.00	5.00	4.00	0.82
5	2.50	5.00	4.31	0.75
6	2.67	5.00	4.16	0.83
7	2.00	5.00	3.97	0.80
8	2.00	5.00	4.12	1.06
Overall Score	2.33	5.00	4.20	0.65

4.2. Age and EFL teachers' perceptions on their lifelong learning competencies (n=40)

As seen in table 3, the results of the descriptive statistics indicated that the EFL teachers at the age 30< group (M= 4.41, SD= 0.63), those at the age 40-40> group (M=4.41, SD=0.75) and those at the age 30-39 group (M=4.02, SD=0.83) had high levels of perceptions on their lifelong learning competencies. The results of the ANOVA tests showed that the EFL teachers' age had impact on their perceptions on the *communicative competence at a foreign language/s* subscale of lifelong learning competencies scale ($p < 0.05$). After the ANOVA tests, a series of post hoc tests (Scheffe tests) were performed to make multiple comparisons among three age groups. These comparisons indicated that the EFL teachers at the age 30< group (M= 4.83, SD= 0.22) had higher level of communicative competence at a foreign language/s than the other two groups (subscale 2, $F=4.54$, $p < 0.05$). Hence, the results of this study were in line with the results of Uzunboylu and Hursen (2013) who stated that younger teachers' perceptions regarding lifelong learning competencies were higher than older teachers' perceptions regarding lifelong learning competencies.

Table 3: EFL teachers' perceptions on their lifelong learning competencies with respect to age (n=40)

Subscales	Age			F (Anova)	p	Scheffe Test
	(1) 30< (n= 12) (M, SD)	(2) 30-39 (n=22) (M, SD)	(3) 40-40> (n=6) (M, SD)			
1	4.85 (0.43)	4.57 (0.71)	4.66 (0.51)	0.76	0.47	
2	4.83 (0.22)	4.20 (0.75)	4.66 (0.51)	4.54	0.02*	(1)>(3) >(2)
3	3.86 (0.84)	3.87 (0.68)	4.27 (1.16)	0.63	0.53	
4	4.00 (0.63)	3.93 (0.89)	4.25 (0.98)	0.33	0.71	
5	4.62 (0.48)	4.06 (0.83)	4.58 (0.66)	2.78	0.07	
6	4.22 (0.90)	4.06 (0.82)	4.44 (0.80)	0.52	0.59	
7	4.35 (0.67)	3.77 (0.86)	3.95 (0.60)	2.15	0.13	
8	4.58 (0.90)	3.77 (1.10)	4.50 (0.83)	2.94	0.06	
Overall Score	4.41 (0.63)	4.02 (0.83)	4.41 (0.75)			

* $p < 0.05$

4.3. Gender and EFL teachers' perceptions on their lifelong learning competencies (n=40)

As seen in table 4, the results of descriptive statistics revealed that the total mean of female EFL teachers' perceptions on their lifelong learning competencies (M=4.21, SD=0.78) was higher than the total mean of male EFL teachers' perceptions on their lifelong learning competencies (M=4.16, SD=0.81), which indicated that female EFL teachers were more competent than male EFL teachers in terms of their lifelong learning competencies. However, a series of Independent-Samples T tests that were performed to compare female EFL teachers' mean scores for lifelong learning competencies with male EFL teachers' mean scores for lifelong learning competencies unearthed that none of the eight subscales examined was found to be significantly different. This finding provided evidence in support of Sahin et al. (2010), Yaman and Yazar (2015), Arslangilay (2017) who indicated that there were no significant differences between male and female students' mean scores with respect to their lifelong learning competencies.

Table 4: EFL teachers' perceptions on their lifelong learning competencies with respect to gender (n=40)

Subscales	Male (n=11) (M, SD)	Female (n=29) (M, SD)	t-value	df	p
1	4.72 (0.45)	4.65 (0.67)	0.327	38	0.74
2	4.45 (0.64)	4.46 (0.68)	-0.046	38	0.96
3	4.15 (0.68)	3.85 (0.84)	1.055	38	0.29
4	4.04 (1.08)	3.98 (0.72)	0.212	38	0.83
5	4.22 (0.64)	4.34 (0.80)	-0.434	38	0.66
6	4.24 (0.87)	4.13 (0.83)	0.350	38	0.72
7	3.79 (0.87)	4.04 (0.78)	-0.867	38	0.39
8	3.72 (1.27)	4.27 (0.95)	-1.474	38	0.14
Overall Score	4.16 (0.81)	4.21 (0.78)			

*p< 0.05

4.4. Department and EFL teachers' perceptions on their lifelong learning competencies (n=40)

As displayed in table 5, the results of the descriptive statistics revealed that the total mean of perceptions on lifelong learning competencies for EFL teachers who graduated from Translation and Interpretation department (M=4.78, SD=0.20) was higher than the total means of perceptions on lifelong learning competencies for EFL teachers who graduated from American Culture and Literature (M=4.32, SD=0.55), English Linguistics (M=4.21, SD=0.82), English Language Teaching (M=4.17, SD=0.81) and English Language and Literature (M=3.87, SD=0.83) departments. This outcome indicated that EFL teachers who graduated from Translation and Interpretation department had the highest level of perceptions on their lifelong learning competencies. However, the results of the ANOVA tests indicated that department did not have any impact on EFL teachers' perceptions of lifelong learning competencies. Hence, it can be stated that the results of this study were opposed to the results of Savuran (2014) who indicated that the total mean of perceptions on lifelong learning competencies for EFL teachers who graduated from English Language Teaching department was higher than the total means of perceptions on lifelong learning competencies for EFL teachers who graduated from other departments.

Table 5: EFL teachers' perceptions on their lifelong learning competencies with respect to department

S	Department					F (Anova)	p
	(1) ELT (n=23) (M, SD)	(2) ELL (n=8) (M, SD)	(3) ACL (n=2) (M, SD)	(4) EL (n=2) (M, SD)	(5) TI (n=5) (M, SD)		
1	4.67 (0.64)	4.31 (0.72)	5.00 (0.00)	5.00 (0.00)	5.00 (0.00)	1.37	0.26
2	4.50 (0.67)	3.96 (0.64)	4.50 (0.70)	4.62 (0.17)	5.00 (0.00)	2.24	0.08
3	3.86 (0.89)	4.04 (0.74)	3.50 (0.70)	3.66 (0.94)	4.33 (0.47)	0.55	0.69
4	3.97 (0.87)	3.81 (0.88)	3.50 (0.70)	4.25 (1.06)	4.50 (0.35)	0.77	0.54
5	4.34 (0.71)	3.81 (0.92)	4.50 (0.70)	4.50 (0.70)	4.80 (0.44)	1.54	0.21
6	4.05 (0.86)	3.79 (0.83)	4.83 (0.23)	4.16 (0.23)	5.00 (0.00)	2.35	0.07
7	3.90 (0.79)	3.68 (0.85)	4.25 (0.70)	4.00 (1.41)	4.65 (0.37)	1.27	0.29
8	4.13 (1.05)	3.62 (1.06)	4.50 (0.70)	3.50 (2.12)	5.00 (0.00)	1.60	0.19
Ov. Score	4.17 (0.81)	3.87 (0.83)	4.32 (0.55)	4.21 (0.82)	4.78 (0.20)		

*p< 0.05

4.5. Teaching experience and EFL teachers' perceptions on their lifelong learning

To compare the possible differences derived from teaching experience groups, the researcher categorized the participants into three groups: 1-5 years group, 6-10 years group, 11-11+ years group. As seen in table 6, the results of the descriptive statistics indicated that EFL teachers with 1-5 years of teaching experience (M=4.45, SD=0.58) had higher level of perceptions on their lifelong learning competencies than EFL teachers with 6-10 years of teaching experience (M=4.10, SD=0.83) and those with 11-11+ years of experience (M=4.03, SD=0.86). This outcome indicated that EFL teachers with 1-5 years of teaching experience were better than the other two groups in terms of their lifelong learning competencies. The researcher also conducted a series of ANOVA tests to evaluate the possible interactions between the EFL teachers' teaching experience and their perceptions on their lifelong learning competencies. The results of the ANOVA tests revealed that the EFL teachers' teaching experience had impact on their perceptions on *communicative competence at a foreign language/s* and *the competence of learning to learn* subscales of lifelong learning competencies scale ($p < 0.05$).

Table 6: EFL teachers' perceptions on their lifelong learning competencies with respect to teaching experience (n=40)

Subscales	Teaching Experience			F (Anova)	p Test	Scheffe
	(1) 1-5 Yrs (n= 13) (M, SD)	(2) 6-10 Yrs (n=17) (M, SD)	(3) 11-11+Yrs (n=10) (M, SD)			
1	4.98 (0.06)	4.58 (0.70)	4.42 (0.73)	2.84	0.07	
2	4.86 (0.28)	4.29 (0.74)	4.22 (0.68)	4.19	0.02*	(1)>(2) >(3)
3	3.92 (0.61)	3.82 (0.80)	4.13 (1.05)	0.45	0.63	
4	4.26 (0.59)	3.85 (0.96)	3.90 (0.80)	1.04	0.36	
5	4.69 (0.48)	4.26 (0.73)	3.90 (0.90)	3.57	0.03*	(1)>(2) >(3)
6	4.35 (0.88)	4.15 (0.72)	3.93 (0.95)	0.72	0.49	
7	4.21 (0.63)	3.92 (0.89)	3.75 (0.84)	0.98	0.38	
8	4.38 (1.12)	4.00 (1.11)	4.00 (0.94)	0.55	0.57	
Overall Score	4.45 (0.58)	4.10 (0.83)	4.03 (0.86)			

* $p < 0.05$

After the ANOVA tests, a series of post hoc tests (Scheffe tests) were performed to make multiple comparisons among three teaching experience groups. These comparisons indicated that the EFL teachers with 1-5 years of teaching experience (M= 4.86, SD= 0.28) had higher level of communicative competence at a foreign language/s than the other two groups (subscale 2, F=4.19, $p < 0.05$). Moreover, these comparisons indicated that the EFL teachers with 1-5 years of teaching experience (M= 4.69, SD= 0.48) had higher level of the competence of learning to learn than the other two groups (subscale 5, F=3.57, $p < 0.05$). Hence, it can be stated that the results of this study were in line with those of Bozat et al. (2014) who indicated that teachers with 1-5 years of teaching experience had higher level of lifelong learning perceptions than other teachers with more years of teaching experience.

4.6. Answers given to semi-structured interview questions

The researcher asked four semi-structured interview questions regarding lifelong learning to randomly selected 5 EFL teachers. These four questions and some of the striking answers given to these questions by 5 EFL teachers were as follows:

Q1) Do you think that lifelong learning is important for your profession?

'Lifelong learning is important for my professional development and in my opinion this is also valid for every teacher. In a continuously changing world, without learning and researching, a teacher cannot survive.' (Teacher 4, age 27, female, Translation graduate)

'Yes. Because the world is changing and we must adapt ourselves to this change. Everyday the technology, methodology and vocabulary are expanding and we must learn them to continue our professional lives.' (Teacher 3, age 30, male, English Linguistics graduate)

'Absolutely. There are two main reasons for learning throughout life: personal and professional development. Being well-educated is not necessarily the key to the employment. Employers are looking for well-balanced people with transferable skills.' (Teacher 1, age 28, female, Translation graduate)

'Sure. As teachers, we all should develop ourselves, both professionally and socially, in order not to get rusty. I have never thought of being a teacher that takes the same path in his whole life.' (Teacher 5, age 28, male, ELT Graduate)

Q2) Do you give importance to your lifelong learning? If no, what challenges do you face with respect to your lifelong learning?

'I give importance to my lifelong learning as a teacher in that learning is a continuous process and as teachers I think that lifelong learning is inevitable.' (Teacher 4, age 27, female, Translation graduate)

'Of course, I do. A life without lifelong learning is meaningless and worthless.' (Teacher 5, age 28, male, ELT Graduate)

'Learning is the foundation for continuous improvement because of increasing globalization and rapidly evolving technologies. We are all born with some natural talents and abilities but that doesn't mean we are the masters. There are always new things to learn. The more we learn them the more we will see of the same issue.' (Teacher 1, age 28, female, Translation graduate)

'Yes, I do. I always try to improve myself in every possible aspect of life.' (Teacher 2, age 29, female, English Language Teaching graduate)

Q3) What are the benefits of lifelong learning for your profession?

'Lifelong learning helps me to stay updated with the changes in the field of English language teaching. Language teaching approaches, methods and techniques are changing and I need to keep up with these changes and innovations to better teach English to my students.' (Teacher 2, age 29, female, English Language Teaching graduate)

'Lifelong learning makes me more productive in my profession because I learn new skills and abilities. I can meet the needs and expectations of my students well.'

Q4) What do you do to foster your lifelong learning related to your profession?

'Internet, doubtlessly. I spend most of my time on the Internet, so I try to make the most of it by searching new methods of teaching English. As a teacher who believes a language can be learned by practising and having fun, not by teaching or testing, I also try to encourage my students to participate in free online speaking clubs.' (Teacher 5, age 28, male, ELT Graduate)

'Reading any sort of things, being curious about anything, teaching/sharing, making the learning a priority' (Teacher 1, age 28, female, Translation graduate)

'Reading any kind of literature or any other sources, trying to get information about different things all the time via various sources, respecting to ideas of people around me and making use of them, attending various courses/seminars/conferences/classes both professionally and personally, trying to learn new things both about my profession and interests, trying to learn at least one thing that I do not know or have not heard of before every single day.' (Teacher 2, age 29, female, English Language Teaching graduate)

Based on the responses given to the four semi-structured interview questions by 5 EFL teachers, we can indicate (a) that lifelong learning is viewed as important for teaching profession by EFL teachers (b) that EFL teachers give importance to their lifelong learning because there are always new things to learn (c) that EFL teachers stay updated with changes in the field of English language teaching and become more productive in their profession (d) that EFL teachers try to learn new things via various sources.

5. Conclusion

The results of this study indicated that EFL teachers' perceptions on their lifelong learning competencies were high and that their perceptions differed as regards age and teaching experience. The results of the study also revealed that EFL teachers' perceptions on their lifelong learning competencies did not differ as regards gender and department. Moreover, it was found that EFL teachers gave prominence to their lifelong learning in that there were always new things to learn. Finally, it was revealed that EFL teachers kept themselves updated via the changes in the fields of ELT and became more fruitful in their teaching profession by the help of lifelong learning.

Finally, it can be stated that lifelong learning is a prominent mechanism to stay current with the newest information and knowledge. EFL teachers should involve in lifelong learning to learn ways of teaching. Educational institutions should create a learning context where teachers and learners can become lifelong learners (Amzat, Al-Mahruqi, Teslikhan & Omairi, 2017). To boost EFL teachers' lifelong learning related to their profession, educational institutions can organize some courses, seminars and conferences on ELT and EFL teachers can be stimulated to attend these lifelong learning activities to keep up with new developments in the field of ELT.

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High Drop-out Rates and the Perception of Success in MOOCs

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Abstract

In an era when the effects of information technologies and the change they have brought together has been felt in every area of life, it is not wrong to claim that this change has also affected education. MOOCs which are said to meet the interests of the learner profile the best, which has changed with the developing technology, can be considered as one of the remarkable innovations in recent times. To be able to keep up with the various variables, such as learning profiles and educational institutions, it has had too many types besides two different main types since the first day of their establishment. It was initially thought that MOOCs, which were addressing mass figures, were thought to be a thorough reform of education and suggested that it would completely change the structure of the universities. However, over time, it has been observed that the dropout rates of these distance courses with mass participation figures are also massive and this is a complete disappointment. The reasons for high dropout rates were investigated and various important findings were obtained. As a result of this, the perception of success in MOOCs has begun to be discussed among the scholars. It has been suggested that the perception of success in distance education should not be evaluated exactly in the same way as face-to-face education, and that the participation level is not a measure of success in distance education. In this review, the history of MOOCs, its history, its development, the changes it has had since it was founded, its varieties and increasing dropout rates, and the perceived success of KACD are mentioned. The reasons of high dropout rates and what needs to be done to reduce this rate are stated and the perception of success by interpreting the dropout rates in MOOCs are discussed.

Keywords

MOOCs, distance education, drop-out rates, perception of success

The Reflective Practitioner - An International Online-Survey of German and Swedish In-Service Teachers

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Abstract

Nowadays there is no doubt in the professional discourse regarding the great importance of competence of reflection regarding the development of pedagogical professionalism (Berndt & Häcker 2017). Against the background of complex and unpredictable demands of teaching in classes with increasing diversity, the competence to reflect comes to the fore. Teachers are expected to act reflected and therefore professional in pedagogical situations and not only react unreflected. According to this, teachers are conceptualized as reflective practitioners (Schön, 1983). However, the competence of reflection cannot be explained by reflection performance alone - in the sense of reflection ability.

Related to the definition of competence, given by Weinert (2001), the concept of competence is defined as cognitive abilities and skills to solve a problem involving associated aspects of motivation and volition. This makes it clear that in addition to the ability to reflect, the willingness to reflect can be interpreted as an important characteristic of teachers' competence of reflection (Göbel & Neuber, 2017).

The present study, which was initiated due to the successful networking at the GETL-conference in Croatia in 2017, was conceptualized as an online survey and carried out in Germany and Sweden. 294 German and Swedish teachers filled in the questionnaire to self-assess the willingness to reflect regarding teaching and school settings as well as the willingness to reflect in general. Data were calculated by correlation analysis and multivariate variance analysis. Results show that teachers in Sweden self-assess their willingness significantly different in some important fields.

Keywords

Willingness to reflect, reflection competence, reflective practitioner, professionalization of in-service teacher

A Comparison of Self-Assessed and Measured Teacher Students' Competence of Reflection - How to Deal with the Resulting Consequences?

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Abstract

Nowadays there is no doubt in professional discourse regarding the great importance of reflection for the development of pedagogical professionalism (Berndt & Häcker 2017). Regarding the assumption that reflection is a key competence for teacher's professionalization (Leonhard & Rihm, 2011), that is not natural given in any case, the modularized reflection model 'STORIES' (Students' Training of Reflection in Educational Settings) was developed to train teacher students' reflection competence step by step and demand-driven.

In contrast to other reflection models (e.g. Hatton & Smith 1995) this one does not proceed from hierarchically structured levels of reflection. It rather implies assumptions of reflection by Schön (1983) and Müller (2010). STORIES defines four dimensions of reflection ('linking theory and practice', 'perception of different perspectives', 'development of alternatives' and 'reference to one's own professionalization') that mark different single processes of reflection with different quality of reflection. Pointing out different facets of reflection makes it more addressable and applicable for teacher students by recognizing individual trainings foci.

To evaluate the model 178 teacher students took part in this study. Each of them analyzed written pedagogical situations by applying 'STORIES'. To assess teacher students' reflection competence their drafts were analyzed by a specifically created matrix. Additionally, the students filled in a questionnaire to self-assess their reflection competence at the beginning of the study. The results are alarming: Teacher students assess themselves as high self-reflected and empathically (this confirms other empirical findings, Wyss 2013), but the measured results don't go along with the performed issue at all.

Keywords

Reflection competence, reflective practitioner, professionalization of teacher students, reflection model, empirical measurement of reflection competence

Culture or Language? What are the Assumptions About International Students' Adjustment in a Rural and Regional University Context?

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Abstract

Adjustment for international students is a necessary response to living and studying in a new country. International students are faced with a range of complex and novel situations that they must adjust to. The literature suggests that international students may experience issues in adjustment in several common areas, including social adjustment (Hechanove-Alampay, Beehr, Christiansen & Horn, 2002); academic adjustment (Edmond, 1996; Ladd & Ruby, 1999) and cross-cultural adjustment (Wang, Li, Noltemeyer, Wang, Zhang & Shaw, 2018; Ward, Bochner, & Furnham, 2001). This paper explores the ways that postgraduate students at a rural and regional Australian university adjusted to their new living and studying environment. Of particular focus in the study was the role that cultural adjustment played for international students.

The guiding research questions for this project focused on the students' experiences of cultural adaptation during their post graduate studies and asked, 'In what ways do postgraduate students at a regional Australian university engage in cultural adjustment?' and 'What are the underlying assumptions about the cultural adjustments of international students present in the tertiary institution?'

The Revised Socio-Cultural Adaptation Scale, or R-SCAS, (Wilson, 2013) was delivered electronically to students to provide an initial measure of their self-reports of adjustment via three adjustment dimensions -social, cultural and academic. The participants were also invited to participate in interviews. The findings of this study suggest that international students found cultural adjustment more challenging than academic adjustment. This paper will discuss the implications of cultural adjustment for international students at regional and rural universities.

Keywords

International students, cultural adjustment, regional universities

Development of a Non-Venue Based Alternative Assessment Framework in Accounting Sciences in Open Distance Learning

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Abstract

Worldwide students compete for scarce places in universities. With growing and changing student populations the demand exceeds the supply. One of the options to address this issue, is to expand distance education. Innovations in information and communication technology allow for expansion in distance learning as e-learning has become more accessible. The purpose of this study is to develop innovative techniques to assess distance education students in accounting sciences, to allow for their individual growth and not limit assessments to available venues and venue based assessments. A strong focus is placed on the identity verification of students to discourage students to cheat, plagiarize or make use of ghostwriters during the assessment process. Design-based research is being used in this study to design and develop a non-venue based alternative assessment framework for accountancy modules in open distance learning. A conceptual framework was developed based on neo-institutional theory principles and existing literature. As part of the design-based method, this conceptual framework will be evaluated through interviews with lecturers and members from professional accountancy bodies in South Africa and internationally, to ensure continued accreditation of the qualifications involved. A final non-venue based alternative assessment framework for accountancy modules in open distance learning will be developed after evaluation of all role players involved in the study.

Keywords

Distance education, identity verification, neo-institutional theory, non-venue based alternative assessments, technology

Obstacles Affecting the Students' Learning Process Negatively

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Abstract

Student engagement is a concept often discussed in education and an abundance of research exists on the topic. Student engagement is something instructors want to see and feel in their classrooms. Generally, student engagement tends to be viewed as the level of interest students show towards the topic being taught; their interaction with the content, instructor, and peers; and their motivation to learn and progress through the course. I have a deep interest in this area and decided to explore it by identifying strategies that help overcome obstacles to student engagement in their learning. Obstacles to student engagement were broken down into three areas: social, administrative, and motivational. Looking at student engagement barriers in this way made them seem easier to overcome. The purpose of this study was to determine the obstacles which affect the students' learning process negatively. The study was conducted at Anadolu University, School of Foreign Languages. The participants were C level students. Overall, the findings affirmed that the majority of the participants of the research has the similar hindrances in their learning to overcome.

Keywords

Student engagement, obstacles to student engagement, learning process, motivation

Technology-Enhanced Design Thinking (DT): What Impact Does a Course on Technology and Design Thinking Have on Pre-Service Teachers' Ability to Develop Lessons and Assessment Tools?

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Abstract

Design thinking (DT) is a creative approach to solving problems that can transform classroom experiences in relation to cultivating digital literacy and 21st century skills. However, little research has assessed how teachers in training understand and perceive design thinking, and how they will integrate design thinking into lessons and assessments. The present study assessed how participating in an immersive DT-based course impacted pre-service teachers' integration of design thinking into technology-enhanced lesson plans and rubrics. Further, we examined teachers' reflections and general perceptions of technology use in the classroom using intake and exit surveys. Overall, pre-service teachers reported positive perceptions of the DT course, such that insecurities about using technology in the classroom were assuaged by scaffolding and support. Findings also showed that teachers' understanding of DT concepts increased, and most teachers successfully integrated DT into lesson plans and rubrics. Reflections indicated that pre-service teachers expressed cautious optimism about integrating DT and technology into teaching practices. In sum, this study demonstrates that even minimal exposure to DT activities and concepts can enhance preservice teachers' ability to integrate DT into classrooms and assessment.

Keywords

Design thinking, teacher education, digital literacy, technology

Introduction

Being successful in today's globally competitive world requires a person to develop and use a different set of skills than was needed previously (Shute & Becker, 2010). A larger percentage of our population is required to think critically, communicate effectively, and work collaboratively with emerging technologies (Partnership for 21st Century Learning). If we are to best prepare children for this digital world, it is imperative that they are provided ample opportunity to gain these essential and emerging skill sets. Current research is identifying how computational thinking, coding, and digital literacies connect to curricula (Hennessey, Mueller, Beckett & Fisher, 2017).

Given that children in their early years are curious and excited learners, it is our responsibility as parents, educators, policymakers and administrators to create learning experiences and environments that tap into this natural curiosity to build the required skills, understanding, and perspectives that will serve students as contributing digital citizens (Anderson, Comay & Chiarotto, 2017; Partnership for 21st Century Learning). This not only includes supporting foundational knowledge and skills in language literacy, numeracy, mathematics, science, humanities and the arts, but also the skills necessary for critical thinking and problem solving in an increasingly complex world. Innovative and creative approaches to addressing problem solving are emerging at all levels of education (Crichton & Childs, 2016; Florez et al., 2017; Cannon Design, 2010).

Design thinking (DT), in particular, has been identified as an analytic and creative process that engages a person in opportunities to experiment, problem solve, gather feedback and analyze solutions (Razzouk & Shute, 2012). It is considered one of the most promising ways of transforming organizations and businesses in a competitive environment (Gloppen, 2009) and students who apply design thinking principles are more efficient and persistent problem-solvers (Anderson, 2012). As a practice, the core concept of design thinking is to foster innovation and problem-solving by enriching creative thinking abilities. It involves collaborative and human-centered activities which assist in solving complex problems and adjusting to unexpected changes (Razzouk & Shute, 2012). Design thinking definitions vary within the literature with some similarities; as Brown and Wyatt (2010) explain, "design thinking relies on our ability to be intuitive, to recognize patterns, to construct ideas that have emotional meaning as well as being functional" (p. 12). An expansive interactive glossary of more than 50 terms related to design thinking (Weprin, 2016) suggests that design thinking is a complex and multi-faceted approach to learning and problem solving.

Though design thinking has a long history in the fields of architecture and engineering, over the last two decades those in business, education and information technology have taken an interest in how designers think and work and, as a result, have begun to integrate design thinking skills into various professional practices (Adams & Nash, 2016; Brown, 2008; Martin, 2009) and school curricula, such as design, engineering and business (Rotherham & Willingham, 2009), often via technology.

Bringing design thinking into classrooms holds great promise for developing both problem-solving and creative-thinking abilities (Partnership for 21st Century Learning). Synthesizing these two types of 21st century skills with digital technologies further increases students' and teachers' capacity to transform learning in the classroom context. Use of a variety of emerging mobile technologies that support both collaboration and creativity have been shown to improve engagement, communication, and learning outcomes (e.g. Biagi & Loi, 2013; Johnson, Riel & Froese-Germain, 2016; Mueller, Wood, De Pasquale & Cruikshank, 2012).

In educational contexts, design thinking skills can be learned through pedagogical approaches that involve problem-based learning, project-based learning or inquiry-based learning in classroom activities (Dym et al., 2005) and that have been closely connected to the Makerspace movement in elementary schools (Crichton & Childs, 2016). Studies conducted in K-12 education have demonstrated

the role of design-based learning in the improvement of students' skills across the curriculum in a variety of contexts, including respiratory structure (Hmelo et al., 2000), geographic systems (Carroll et al., 2010), interaction design (Dukes & Koch, 2012) as well as the informal education of students in developing a museum visit device (Roussou et al., 2007) and building an eco-playground (Lee & Bichard, 2008).

These studies have mostly followed the conventional five stages of the design process established by Stanford's d.school model (<https://dschool.stanford.edu/>) in an attempt to solve a predefined problem: empathize, define, ideate, prototype and test. The focus of the research has been mostly on the implementation of design thinking practices and the evaluation of outcomes, and generalizability (Aflatoony & Wakkary, 2015). Previous research has indicated that design thinking has the potential to enhance creativity and problem solving which also directly contribute to the development of other associated cognitive and communication skills.

While some educators can be enthusiastic about adopting emerging, innovative practice, and some researchers (e.g. Jordan, 2016; Kirschner, 2015; Norton & Hathaway, 2016) have classified teaching itself as a design science, teachers generally teach the way they were taught (Britzman, 1991). Although problem solving principles may already exist within school curricula (Hennessey et al., 2017) and there are similar constructs in alternative pedagogies (Ahonen & Harding, 2018), it is rare to find design thinking within teacher education programs (McKenney et al., 2015) and there remains a lack of empirical research on best practices for the integration of technological training and design thinking principles into pre-service education. Studies tend to report the educational benefits for students when schools adopt design thinking (e.g. Chamberlain & Mendoza, 2017), however, there has been comparatively less research on teachers' experiences and perspectives in implementing design thinking in classrooms (Retna, 2016). Indeed, failure to include these skills as part of broader teacher education programs could delay widespread implementation of a design thinking approach with K-12 students. Moreover, given that teachers are the ones who typically choose whether to implement design thinking in the classroom and that it is costly to re-train teachers following deployment, the importance of understanding the process by which preservice teachers integrate these principles into their teaching practice is clear. Changing the "way of thinking" at the pre-service stage of teacher preparation (Kotsopolous, Mueller & Buzza, 2012) will ensure that a design thinking approach to problem solving will be carried into inservice instruction.

The current study examined the impact of an experiential approach to teaching design thinking, measuring preservice teachers' existing knowledge of, and comfort with, the concepts and pedagogy associated with design thinking. In addition, it is important to explore how a workshop approach within a course enables preservice teachers to create design thinking lessons and assessment tools and to reflect on their own learning processes within that context. This study was guided by the following questions:

- What impact does a design thinking course have on pre-service teachers' ability to develop lessons and assessment tools related to design thinking?
- In what ways might the integration of technology-enhanced practices reflect critical elements of design thinking?
- What kinds of conclusions (i.e., attitudes, beliefs) do pre-service teachers develop regarding the integration of technology with design thinking in K-12 classrooms?

Method

Participants

Participants were teacher education candidates registered in an elective course on technology-enhanced design thinking ($N = 12$; 75% female; *Mean age* = 32 years). Ten participants were in the

second year of a two-year post-graduate teacher education program in a mid-sized Canadian city; the other two were in the first year of the same program. Participants completed informed consent and an initial survey gathering basic demographic information such as gender and program, familiarity with design and computational thinking concepts, and comfort and proficiency with technology in the classroom. Eighty percent of participants indicated having had experience coding before the workshops. Participants categorized their understanding of coding as inexperienced (42%), basic (42%), or somewhat experienced (16%). Half ($n = 6$) of the sample reported having some practical experience with integrating design thinking into classroom activities, for instance, creating 3D printed objects to solve problems, and executing design thinking games and challenges.

Procedure

This project focused on how participants conceptualize and apply design thinking principles as they engaged in workshops using technology to solve a variety of problems. An additional focus was the participants' capacity to understand and integrate design thinking into the Ontario curriculum and learning experiences for students.

Data sources

Various methods of data collection captured participants' experiences and thought processes throughout the workshops. In addition to the initial survey described above, data sources included the following:

- 1) Participants' artifacts: Lesson plans using a design thinking framework; rubrics to assess students' design thinking work; and reflection papers about the experience of integrating design thinking concepts into teaching. These were collected after completion of all workshops.
- 2) Anonymous exit survey, with the following questions:
 - a) What is your understanding of the term 'design thinking'?
 - b) What are your thoughts on technology use in the classroom?
 - c) Which of the technology-enhanced activities best helped you to understand the concept of design thinking?
 - d) Which of these activities would be most useful to help children and youth to understand the concept of design thinking?

Workshop content and industry partner

Each workshop explored different content related to design thinking. Workshop activities were led by industry partner and educational technology platform InkSmith Ltd., a distributor of 3D printers who provides workshops on optimizing technology in education. The first workshop was six hours in length and was required of all participants. Participants then were required to attend two of three subsequent sessions, each three hours in length. Table 1 summarizes all participant activities across workshops.

Table 1: Progression of participant activities across workshops

Workshop #1 (n = 12)	<ol style="list-style-type: none"> (1) Introduction to design thinking and co-creation of vocabulary used at each phase (2) Coded a <u>tank</u>* to move down a curved road with visibility only through 3 small holes in the bottom. There were markings on the borders of the road for guidance. (3) Surveyed Ontario curriculum documents for examples of computational thinking and intersections between design thinking and computational thinking. (4) Programmed a <u>Micro:bit</u> (a small microprocessor) to move their “tank” along a track at optimal speed. (5) In groups, developed an assistive solution for an assigned case study (known as <u>5 Chairs Challenge</u>).
Workshop #2 (n = 6)	<ol style="list-style-type: none"> (1) Prototyped and tested a <u>catapult/trebuchet</u> to get materials across a canyon to a condor nest using limited materials. (2) Overview of expectations for lesson plans and rubrics.
Workshop #3 (n = 10)	<ol style="list-style-type: none"> (1) Group 1 completed the trebuchet/catapult design challenge that they missed in Workshop 2. (2) Group 2 built a rocket and a Prizm mug using Tinkercad software and addressing specific design constraints.
Workshop #4 (n = 8)	<p>During this workshop, participants:</p> <ol style="list-style-type: none"> (1) Assembled, coded and tested a Micro:bit robot. Unlike the previous workshops, this final session also included planned failure experiences to further explore participants’ thought processes. (2) Completed pre, during, and post-assembly surveys evaluating their experience and attitude towards assembling electronics, and their reactions to the workshop activities.

*Note: Activities are referred to by the underlined names in the Findings.

Analysis

Quantitative data from exit surveys were analyzed for descriptive information. Due to the small sample size, we did not perform inferential statistics, but provide descriptive statistics. Open-ended responses from the initial intake and exit surveys, lesson plan content, rubrics, and reflections were analyzed using analytic induction (Goetz & LeCompte, 1984), open coding (Strauss, 1987) and constant comparison (Glaser & Strauss, 1967). Responses were categorized into themes and assigned numeric codes corresponding to each theme by the first author and trained research assistants. Two raters independently rated and ranked lesson plans and analyzed them for appropriate application of design thinking. Two other raters similarly analyzed the rubrics. There were a few small discrepancies that were resolved through discussion.

Trustworthiness

Trustworthiness of findings, or the amount of confidence that the findings represent the realities of the participants (Lincoln & Guba, 1985), may be supported using the criteria of credibility (which aligns with the quantitative criterion of validity); dependability (reliability); confirmability (objectivity); and transferability (generalizability). To support the study’s *credibility*, or confidence in the truth of the findings, triangulation of data methods, sources, and researchers was used. Data arose from surveys, field notes, participants’ artifacts (methods), and from all of the involved participants (sources). Triangulation, and reflexivity and debate inherent in a study with multiple researchers, also provide evidence of *confirmability*, through revelation of possible contamination from preconceived ideas or biases (Barry, Britten, Barbar, Bradley & Stevenson, 1999).

Dependability was demonstrated by independent ratings of lesson plans and rubrics, and an interrater reliability check for the themes. Two raters each analyzed six quotes from reflections and matched them with themes. After elaboration on the meanings of themes, each rater agreed with the first author on 5 of 6 matches of quotes to themes (83%). Finally, with limited time and a small number of participants, this study could not aspire to *transferability*, although readers may find parallels between our findings and other contexts.

Findings

Six major themes emerged from the data, which will be elucidated in this section, supported by quantitative results.

Themes

Perceived cognitive and affective effects of workshops. Participants' opinions of the workshops were overwhelmingly positive. Participant #2 summed up the learning experience that most participants described:

These workshops have opened my eyes to the possibility of connecting design principles across curricula in my classroom so that students become familiar with the language and processes of design thinking. I gained insight into the nature of design thinking and I learned how to apply a structured process to design lessons through the d.school model (Participant #2, reflection).

Several participants mentioned that the scaffolding, collaborative work, and support provided, helped them to overcome initial insecurities about their success in the course: "I did not think of myself as a tech-savvy person and I was nervous about how well I would succeed in the class. By doing this elective I felt that I really could do these sorts of things and that it is something I can definitely learn" (Participant #9, reflection).

Some participants also applied the terms "fixed" and "growth" mindsets (Dweck, 2006) to describe their cognitive process:

At the beginning of the workshop I had a fixed mindset, I was apprehensive about this elective doubting my capabilities. However, this thinking was quickly changed to a growth mindset when it became evident that this elective would be a fun and engaging course and I would learn how to apply technology design thinking to the students in a 21st century classroom (Participant #4, reflection).

Thus, the participants believed that the workshops were successful in teaching the concepts as well as removing self-doubts related to technology use.

Understanding of design thinking. In intake surveys, participants described their understanding of the term 'design thinking.' Central concepts mentioned by participants are indicated in Table 2. Eight percent of participants did not provide a response. The mean number of concepts mentioned in the responses was 2.4. One of the more elaborated answers was, "Using the scientific design process to think about, plan and carry out a strategy to solve a problem." Analysis of a parallel question on the exit survey revealed that all participants gave a somewhat accurate definition, and many included concepts that were mentioned on the intake survey. A representative answer on the exit survey was, "I believe that design thinking involves thinking through the possible steps or criteria needed to find a solution to a problem. Design thinking is a cyclical process and involves some troubleshooting." The mean number of concepts was 2.8. While the sample size is too small to produce generalizable conclusions, there did seem to be changes in the participants' thinking across the workshops.

Table 2: Participants' understanding of 'design thinking' before and after workshops

Concept	Intake survey (n = 12)	Exit survey (n = 11)
Cognitive process	67%	36%
Problem solving	33%	55%
Planning	42%	18%
Scientific process	17%	0%
Creativity	33%	36%
Strategy, step by step process	33%	73%
Cyclical, iterative process	0%	45%

Additional concepts mentioned by one participant on the intake survey were connecting concepts and reflectivity; on the exit survey, reflectivity, visual representation, collaboration, scaffolding and computational thinking each received one mention.

Within their post-course reflections, several participants mentioned the similarities between design thinking and the scientific method (25%), inquiry (33%), arts-based (8%) learning, and play-based thinking as observed in kindergarten classrooms (8%; like ideas mentioned by Dym et al., 2005 and Flatt, 2016). Additionally, participants were asked which workshop activity(ies) helped them to best understand design thinking, which they thought would best help youth understand design thinking. Interestingly, participants were almost evenly split among the four activities (tank, Micro:bit, catapult, 5 chairs) and they combined these activities in interesting ways:

I think that the trebuchet activity best helped me to understand design thinking because I have a better understanding of working with my hands to create as opposed to working within a coding environment. As my comfort level with coding increases, I can see that the challenges were very similar. With coding, the algorithm comes before the testing, whereas I built the trebuchet many times over before writing an algorithm to explain how it works. In this way, the Micro:bit activity better develops the understanding of algorithms as part of design thinking" (Exit survey).

In their reflections, participants were unanimous that the activities were powerful in developing their understanding of design thinking: "Every minute of the coursework contributed to building my understanding of the concepts" (Participant #7, reflection)

In reference to the question about which activity would best help youth understand design thinking, the catapult activity was most often mentioned, followed closely by the Micro:bit. Several participants mentioned that all of the activities were helpful in elucidating different ways that design thinking could be integrated into classrooms.

Lesson plans. Participant lesson plans all successfully linked to the Ontario curriculum in various subject areas. Table 3 details the topics and disciplines incorporated in the lesson plans. Table 3 also indicates how many of the 5 steps of the d.school design process were included in the plan, and whether technology was included and how.

Table 3: Topics and disciplines linked to curriculum content within participant lesson plans

Participant #	Lesson Topic	Disciplines	Steps of DT?	Technology?
1	Marble race track	Science/math/art	4; used different terms than d.school	Yes: Spreadsheet, sketchpad
2	Ergonomic game controller	Science	4	Yes: Tinkercad
3	Move supplies to war zone	Math	All	Yes: Micro:bit
4	Electric guitar	Music/science	4	Yes: Micro:bit
5	Move supplies to people trapped in rubble	Science/math	All	Yes: Micro:bit
6	Portable classrooms	Math/science	All	Yes: Tinkercad
7	Pop cooler	Science	All; used different terms than d.school	No
8	Traffic control in school zone	Math/media literacy	All	Yes: Micro:bit
9	Roof designed to manage snowfall	Science	All	Yes: Tinkercad
10	Global warming issues	Science/social studies	3	No, except PowerPoint in final presentation
11	School problems submitted by faculty	Science/social studies	All	Yes: Tinkercad

Math and science were the most common subjects incorporated into the lesson plans, though the range of disciplines was large. All participants used at least three of the d.school steps in their plans, and eight included some type of technology, mostly those that were used in the workshops.

Rubrics. Participants were shown a model rubric from d.school from which they could model their lessons. The rubrics revealed a range of understanding of design thinking. While seven of the participants used DT vocabulary, their rubrics lacked depth of conceptual understanding of the nuances and interrelationships among the stages. For example, one participant used the following language for the highest level of *prototype*: “Student demonstrates a high degree of effectiveness in creating a visual representation (sketch) ... clearly labeling the design.” This participant did not capture the importance of using a sketch as a tool for product improvement. The rubrics ranged from very general and applicable to a number of design thinking projects, to others that were specific to a single lesson. All rubrics included at least three of the five d.school steps. Three rubrics augmented the d.school steps with elements specific to their lesson.

Reflections. In their reflections, participants unanimously supported the integration of design thinking in the curriculum of K-12 classrooms and a wide range of topics that can be explored through DT. With additional time and facilitated discussion, these disciplines could have easily been expanded. The following are representative comments:

Even now, students are used to a system in which they hear and collect information and reconstitute it in a variety of prescribed formats that receive a formal grade. I feel that a

powerful integration of design thinking would involve changing this paradigm. Students would need to be invited into a unit of study with the conscious knowledge that [they] would be driving the entire process, with the teacher acting as facilitator (Participant #5 reflection).

Oftentimes when educators think of design thinking, they think of complex technology and machines. However, these workshops beautifully illustrated the simplicity in incorporating design thinking in our classrooms. It is as simple as creating an innovation or invention on paper ([5 Chair] Challenges) or creating a trebuchet (Participant #6, reflection).

In sum, participant responses indicated compelling evidence of the relevance of design thinking to the Ontario curriculum and within K-12 classrooms across disciplines.

Benefits of DT in K-12 and in teacher education. Given that the participants elected into the course, one would assume that they were initially aware of the benefits of implementing design thinking in the classroom. This assumption was supported by many examples of the benefits of design thinking for K-12 students, for example:

I feel that design thinking ... explicitly equip[s] students with the skills that they need to create and build solutions to real-world problems through a process that is simultaneously logical and creative...this course made me realize [the] value [of design thinking processes] in the education of children for the challenges of the 21st century (Participant #5, reflection).

Another participant stated: "I also think that we should integrate it into the curriculum because I think it is a good way to teach perseverance in students and to help them learn that mistakes are okay" (Participant #9, reflection). However, two participants mentioned challenges: "... Concepts were new and required relatively longer periods to truly integrate into the curriculum" (Participant #7, reflection).

Ten of the 12 participants commented on integrating design thinking into teacher education programs:

I feel it is imperative for current teacher education candidates to have this knowledge and understanding [of coding] in their program. We have to be able to lead and teach our students in 21st century skills to think beyond and...to engage our students in problem solving within our society (Participant #4, reflection).

I believe that using design thinking as a framework for lesson creation could be a good way to integrate it into the teacher education curriculum. This would allow for the introduction of design thinking, not only in subjects like Science and Mathematics, but to all disciplines, as it could be used when designing any lesson plan (Participant #11, reflection).

Two other participants responded similarly about using DT as a lesson planning framework. All participants strongly favoured design thinking in K-12 education and in teacher preparation.

Perceived benefits/detriments of technology. While participants saw many benefits of integrating technology with design thinking, doing so created more ambivalence than any other aspect of the project. On the exit survey, 45% responded in this vein, for example: "I feel in today's 21st century classroom technology needs to be incorporated in ALL lessons" (Exit survey, emphasis in original).

The remaining participants saw pluses and minuses to technology in the classroom. Several saw it as one of many useful teaching strategies, when paired with strong curriculum connections:

I think tech is a great thing to have in the class. I think it is a way to engage students and to help extend their learning. That being said I also think that students need to learn skills out of tech. I will use tech in my practice but I don't see it being the driving force of my practice (Exit survey).

Other participants had reservations about issues of student readiness, access or reliability:

If there is enough technology to go around the class if basics are being taught and you are using technology with a purpose, then it is a very useful tool ... Technology can detract when the teacher is uncomfortable with the tool, when the challenge being given is not at a level that is suitable for the students, and if technology is not being used in a meaningful way (Participant #8, reflection, emphasis added).

Participants also voiced opinions about applying technology to design thinking. Some were very enthusiastic: "It is the way forward and without technology, design thinking would not go beyond the next level to provide effective solutions and think 'outside the box'" (Participant #4, reflection). The extension of knowledge via technology was evident in participant responses, for instance: "[Design thinking] incorporates technology in a way that advances learning rather than simply making past ways of learning more efficient" (Participant #10, reflection).

Others expressed more caution around technology and design thinking in teaching: "... [T]echnology has a real place in design thinking when applied conscientiously, but teachers should use it sparingly so that students see it as one of many design tools" (Participant #2, reflection). Some participants expressed concern that technology could inhibit learning, for example:

It is possible for technology to both detract and enhance design thinking. It could provide the stimulus needed to spark the imaginations of students and provide them with a launch point with which to begin their ideation. On the other hand...[it] could cause them to focus entirely on a few approaches, limiting their ideas ..." (Participant #11, reflection)

None of the participants opposed the use of technology, but the majority expressed concern about incorporating it. Reflections demonstrated a depth of thinking about technology and its place in the classroom, revealing considerations related to combining technology with design thinking.

Discussion

This research examined how teacher education candidates engaged with design thinking activities and how they were able to integrate these concepts into lesson plans, assessment rubrics, and reflections. Findings are reconciled with our guiding questions below:

What impact does a course on design thinking have on pre-service teachers' ability to develop lessons and assessment tools related to DT? Participants were very positive regarding the value of the workshops in illuminating the concepts of design thinking and how to incorporate them into teaching. Several stated they would have liked more time to fully explore the application of design thinking within the curriculum. Participants' growth in understanding the design thinking process was exemplified in exit surveys as well as lesson plans, rubrics, and reflections. Participants communicated that all of the workshop activities assisted them in developing design thinking concepts, and they recommended the catapult and Micro:bit as ideal tools for introducing students to design thinking. Lesson plans and rubrics spanned the curriculum, including music, art, media literacy, social studies, math and science. Two participants implemented their lessons with children in their practica and were reportedly successful in motivating students and enhancing problem solving abilities (as also found by Razzouk & Shute, 2012).

How do participants' artifacts reflect the critical elements of design thinking? One hundred percent of the lesson plans and rubrics included at least three of the five steps of the d.school design process. This finding demonstrated the power of even a short-term intervention in enhancing teacher

candidates' ability to integrate DT within the curriculum. Inclusion of this type of workshop potentially addresses the lack of DT in teacher education as found by McKenney and others (2015).

What conclusions do participants draw about the integration of technology with design thinking? As one participant noted in the exit survey, technology in the classroom can be a “double-edged sword,” in that it has the power to augment our cognitive processes to solve problems, but also can hinder learning if not appropriately utilized. For example, just as the person with only a hammer sees only nails in their path, technology can narrow our focus and limit our thinking if it is the only consideration. The critical element seems to be the thoughtfulness with which teachers connect tools to the type of learners, the curriculum and the specific type of technology. Access to technology for all students, readiness of the students for the particular tool, and reliability of the technology are all important considerations for incorporating technology into teaching. Recent research suggests that computer-aided design programs, like Tinkercad, and user-friendly coding software (e.g., Scratch), enable and, indeed encourage, computational thinking and a design approach to problem-solving (Mueller, Kotsopoulos, Floyd, McKenzie, & Weber, 2017).

Limitations. The most significant limitations are the small sample size, the short time period of the study, and the lack of opportunity for the participants to implement their design challenges in classrooms. Given these constraints, the findings must be considered preliminary.

Conclusion

Technology-enhanced design thinking has vast potential to influence the problem-solving capabilities of students (Anderson, 2012; Gloppen, 2009). It provides a structured process to guide thinking and at the same time is applicable to a wide range of problems and developmental stages. Carefully crafted technological tools can facilitate the creative process while supporting student motivation. As demonstrated in this study, within short periods of time, teacher education candidates are enthusiastic about and capable of learning and incorporating DT in lessons and assessment tools. By implementing professional development of DT within teacher education programs, we can accelerate the inclusion of technology-enhanced, design-based activities within schools. Partnering with school boards and industry to demonstrate optimal use of technology with design thinking has the potential to re-invigorate classroom practice and consolidate 21st century learning (Partnership for 21st Century Learning).

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Pow! Zap! Bam! Intercultural Comic Strips Created by STEM Students

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Abstract

Texas A&M University at Qatar (TAMUQ) is comprised of four engineering programs, namely Chemical, Electrical, Mechanical, and Petroleum. The engineering students who opted to take Intercultural Communication (ICC) as a course elective during Spring Semester 2017 embarked on a journey that involved the analysis of intercultural miscommunication. Through the study of various student-created comic strips, this ethnically diverse group of ICC students questioned and addressed their own communication strategies as they sought to improve intercollegiate communication at the engineering workplace. The presenter, a Liberal Arts professor at TAMUQ, will share his findings – ICC student feedback – that not only reasserts the importance of intercultural communication in a globalized world.

Keywords

Intercultural communication, findings



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