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Social Networks as Learning Delivery Platforms

Academic Achievement and Attitudes of Students

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Abstract. Social networks are technology-based applications that enable network members to communicate for mutual benefit. Research evidence has indicated that social networks can serve as learning delivery platforms that contribute to positive student learning. In the present study, three similar groups of students enrolled in an 'Introduction to Ethics' course, were exposed to either Facebook-based, WhatsApp-based or Twitter-based delivery of ethical concepts on their smartphones. At the end of the course, students were examined on ethical concepts. They also responded to a questionnaire that examined user-friendliness, learner motivation and learner satisfaction associated with the social networks they experienced. Results indicate that WhatsApp students attained a higher level of achievement than Facebook students who, in turn, attained higher grades than Twitter students. Additional results indicate that WhatsApp and Facebook students held more positive impressions of user-friendliness and learner motivation related to their delivery platforms than Twitter students. WhatsApp students also held more positive impressions of satisfaction with their delivery platform than Facebook students who maintained more positive feelings of satisfaction than Twitter students. Thus, WhatsApp, and to a lesser extent, Facebook, are associated with enhanced achievement and positive feelings toward their delivery platforms with Twitter students lower on academic achievement and affective variables.

Keywords. WhatsApp, Facebook, Twitter, achievement, affective variables

1 Social networks and learning

Mobile learning provides more flexibility, mobility, convenience and seamless integration of data access for students than other online distance learning environments [1, 2]. Social networks may be defined as applications that utilise mobile learning technology to enable users to communicate with each other by posting information, comments, messages, images, etc. [3]. Education and learning are perceived to be specific topics that can greatly benefit from social networks [4]. Recent studies have indicated the increasing effectiveness of the contribution of social networks to the learning process. Gilroy [5] intimated that social networks as educational tools in the academic landscape are catching on fast as universities, colleges and schools recognise the potential that social networks have for learning. Casey and Evans [6] reached the conclusion that learning via social networking is positively received by students and contributes to an enhancement of students' learning performance. According to Alvarez

and Olivera-Smith [7] social networks offer ample and potentially effective opportunities to improve student learning at the university level. Sobaih et al. [8] confirmed that social networks used in the learning process increase motivation of students and stimulate study activities.

In summary, it may be said that research literature offers increasing evidence that supports the notion that social networks contribute to the fostering of student learning at the university, college and high school levels [9].

1.1 WhatsApp learning delivery platform

One popular application of mobile technology is WhatsApp “instant messaging”. Aburezeq and Ishtaiwa [10] found that the WhatsApp platform has the power to enhance students’ learning and Shambare [11] confirmed that WhatsApp is user-friendly and contributes to the promotion of learning and student satisfaction with the learning process. Minimol and Angelina [12] intimated that the use of WhatsApp as a learning tool increases student curiosity and motivation in the learning process. Echenique et al. [13] contended that all social network tools, but most especially WhatsApp, are advantageous and facilitate motivation and curiosity in the learning process.

1.2 Facebook learning delivery platform

Facebook, in addition to being the most popular social network for social groups, has also become a mobile learning-based learning resource. Isacsson and Gretzel [14] noted that students valued Facebook for providing an informal and motivating learning environment. Other research projects have indicated the positive potential of Facebook as a learning delivery platform at the university level [15, 16]. De Villiers and Pretorius [17] found that when used as a learning delivery platform, Facebook enhances critical collaborative thinking and learning motivation. Facebook is also perceived to enhance student-centered as well as social learning [18]. Mitchell [19] indicated that Facebook-based learning facilitates language learning of foreign students as well as their cultural concept learning. Kassem [20] found that the use of Facebook in the Egyptian secondary educational system led to the narrowing of social gaps between students studying in general (more elite) and technical (less elite) high schools.

1.3 Twitter learning delivery platform

Twitter is another social network application that has been used as a learning delivery platform. Junco et al. [21] postulated that the use of Twitter in university courses enhances students’ learning potential. Other research results [22] indicated that the use of Twitter at the university level enhances learning collaboration among students, increases learning motivation, encourages students feel that learning could be “trendy” and fun and focuses the attention of students on the topic under study. West et al. [23]

confirmed that use of Twitter for learning delivery leads to a positive effect on students' achievement as well as enhancing students' willingness and desire to engage in learning tasks.

2 Academic achievement and social network learning

Several research studies have indicated that students' academic achievement is positively related to the use of technology-based learning delivery platforms. Ituma [24] confirmed that university students who were enrolled in courses where learning was delivered by digital technology had positive perceptions of the learning delivery platform and were in favour of participating in additional courses where learning was delivered by technology-based social networks. Harris [15]) indicated that learning via digital social network delivery platforms contributes significantly to improved student achievement and Chandra and Watters [25] confirmed that learning physics through the medium of technology-based social network learning delivery enhances students' learning outcomes. On the other hand, there are studies, such as research conducted by Gettman and Cortijo [26] as well as Kon Shing and Paredes [27] that cast doubt on the claim that technology-based social network learning delivery leads to significantly improved academic achievement. Thus, in the present study, the potential positive relationship between academic achievement and delivery of learning via WhatsApp, Facebook and Twitter applications will be examined.

3 Affective attitudinal variables and social network learning

Research studies quoted by Katz [28] indicate that affective (non-cognitive) variables such as attribution, autonomy, control of the learning process, creativity, curiosity, flexibility, locus of control, motivation, satisfaction, self-confidence, self-efficacy, self-image, self-esteem and perception of user-friendliness are some of the major variables known to positively contribute to enhanced (improved and efficient) language and concept learning when delivered via social network-based delivery platforms. Furthermore, Katz [28] confirmed the positive relationship of some or all the above factors with effective social network-based delivery of language and concept learning. In this study, key affective (non-cognitive) variables, namely perception of user-friendliness, motivation and satisfaction of students will be examined vis-à-vis their relationship with different social network learning delivery platforms.

3.1 Perception of user-friendliness and social network delivery of learning

Chapman and Henderson [29] showed that perception of user-friendliness by students is a vital indicator that assures the quality of a digital learning delivery platform and Katz [28] confirmed that user-friendliness is a significant attitude that contributes to the enhancement of positive attitudes toward learning in a technology-based

environment. Llorente-Cejudo [30] presented expert evaluators' consensus that confirmed that perceived user-friendliness is a major variable vital for efficient use of different types of digital technology in the learning process. Thus, students' perceptions of user-friendliness of WhatsApp, Facebook and Twitter delivery of learning will be examined in this project.

3.2 Learner motivation and social network delivery of learning

Motivation regarding the learning process is another major variable that leads to efficient and effective learning. Moon [31] contended that information is retained longer if it is presented in an interesting way and evokes motivation and curiosity. Rosen and Beck-Hill [32] confirmed that learning delivery that arouses student motivation enhances the quality of learning and is necessary for learners to successfully utilise technology-based social network learning delivery platforms. Considering the above evidence, the contribution of learner motivation towards the use of WhatsApp, Facebook and Twitter learning delivery platforms will be investigated in this study.

3.3 Learner satisfaction and social network delivery of learning

With reference to learners' satisfaction, Katz [28] found in a comprehensive research study that one of the key constructs that positively affects student performance is the satisfaction derived from studying through social network delivery platforms. When students utilise social networks for their learning, the level of their satisfaction with the educational process increases as does their performance. Minimol and Angelina [12] confirmed how student satisfaction with the use of social networks, such as WhatsApp, Facebook and Twitter in the learning process, leads to higher levels of student engagement, learning, and success. The above evidence highlights the key relationship between satisfaction of students resulting from the use of social networks in the learning process. Thus, in the present study, the comparative learner satisfaction with the three social network delivery platforms will be examined.

4 Aims of the present study

In summary, the aims of the present study are twofold: a) to examine the contribution of WhatsApp, Facebook and Twitter learning delivery platforms to students' achievement; and b) to investigate students' affective perceptions of user-friendliness, learner motivation and learner satisfaction derived from studying via WhatsApp, Facebook and Twitter delivery platforms. These aims are based on significantly positive empirical evidence presented by Casey and Evans [6] who described the positive use of social networks such as WhatsApp, Facebook and Twitter for learning in communities, and by Shambare [11], who indicated the feasibility of using social

networks such as WhatsApp, Facebook and Twitter as effective learning delivery platforms.

5 Method

5.1 Participants

The research sample consisted of 363 first year university social science students enrolled in a 14-week semester-long mandatory “Introduction to Ethics” foundation course offered at one of the seven chartered universities in Israel. The sample included students who came from similar socio-economic backgrounds, and studied in various departments attached to the Faculty of Social Sciences at the university. All students complied with university acceptance criteria (national psychometric university entrance examination and a school-leaving matriculation certificate). All participating students owned smartphones equipped with WhatsApp, Facebook and Twitter access. The students were randomly assigned to three comparison groups ensuring similarity of the groups. The first group of 131 students received their concept definitions via WhatsApp delivery; the second group of 107 students were sent concept definitions by way of Facebook delivery; the third group of 125 students obtained their definitions of concepts through Twitter delivery.

5.2 Research instruments

Two research instruments were administered to the students in this research study:

- a. The first instrument was a standardised ethical concept achievement test which was specially compiled to assess students’ mastery of the 140 ethical concept definitions studied in the semester-long course (10 concepts sent to students weekly during the 14-week long course) The test scale ranged from 0-100, the higher grades indicating higher levels of achievement on the test.
- b. The second instrument administered to the participants was a 23-item Likert-type scale response questionnaire (students responded to a five-point scale with 1=totally disagree to 5=totally agree) designed to examine the attitudes of participants towards their particular learning delivery platform (WhatsApp, Facebook, Twitter) regarding their perceptions of user-friendliness (8 items; Cronbach $\alpha=.87$); learner motivation (8 items; Cronbach $\alpha=.85$); and learner satisfaction (7 items; Cronbach $\alpha=.89$).

5.3 Procedure

Following the establishment of the three comparison groups to which the participants were randomly assigned, students in the first group received ethical concept definitions by way of WhatsApp delivery to their smartphones; students in the Facebook group

received identical ethical concept definitions relayed to their smartphones; and students in the Twitter delivery group received their ethical concept definitions on their smartphones. The students in the three groups were sent concise definitions of ethical concepts studied in the course with each weekly list containing 10 identical definitions delivered via the three respective learning delivery platforms. Thus, each of the students received the same 140 academic ethical concept definitions during the 14-week long course. On completion of the course, the students in the three comparison groups were administered a standardised ethical concept achievement test to assess their level of knowledge and understanding of the 140 definitions sent to them during the course. In addition, they were administered the 23-item attitudinal questionnaire which examined their scores on the three attitudinal research factors, namely perception of user-friendliness, learner motivation and learner satisfaction regarding the learning delivery platform that they personally experienced during the course.

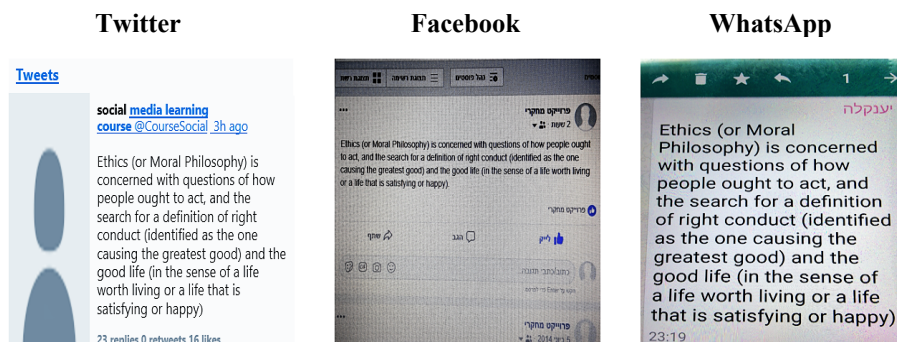


Figure 1. Example of Identical Philosophical Concept presented on the 3 Platforms

The research project adhered to the university research ethics criteria and was approved by the Ethics Committee of the university School of Education.

6 Results

The main aim of this study was to examine the contribution of WhatsApp, Facebook and Twitter learning delivery platforms to students' achievement as well as to investigate students' affective perceptions of user-friendliness, learner motivation and learner satisfaction derived from studying via WhatsApp, Facebook and Twitter delivery platforms. Descriptive statistics as well as results of analyses of variance were conducted to ascertain possible intergroup differences on the four research variables, as related to the three social network learning delivery platforms, are presented in Table 1.

Table 1. One-way ANOVA results for achievement, perception of user-friendliness, learner motivation and learner satisfaction in WhatsApp, Facebook and Twitter learning delivery groups

Group Variable	WhatsApp	Facebook	Twitter	F (2,360)	P
Concept Achievement	M = 88.40 S.D. = 3.31	M = 87.30 S.D. = 3.58	M = 81.90 S.D. = 1.79	170.46	0.000
User Friendliness	M = 3.69 S.D. = 0.45	M = 3.61 S.D. = 0.53	M = 3.26 S.D. = 0.62	6.41	0.002
Learner Motivation	M = 3.97 S.D. = 0.59	M = 3.77 S.D. = 0.61	M = 3.23 S.D. = 0.71	7.00	0.001
Learner Satisfaction	M = 4.25 S.D. = 1.24	M = 3.82 S.D. = 1.32	M = 3.28 S.D. = 1.23	8.80	0.000

One-way analyses of variance (ANOVA) were conducted to investigate intergroup differences on the four research variables. This statistical procedure was chosen as best suited to assess the differences between the three research groups regarding the relationships between the different delivery platforms and the research variables. Results indicate significant differences on achievement scores between students in the WhatsApp, Facebook and Twitter delivery groups. Results of post-hoc Scheffe tests confirmed that students in both WhatsApp and Facebook delivery groups attained significantly higher grades than students in the Twitter group on the ethical concept definitions achievement test. There were no significant differences between grades of students in WhatsApp and Facebook learning delivery groups on the concept definitions test.

Similar significant results were evident from the one-way ANOVAs conducted to examine intergroup differences on the perception of user-friendliness, learner motivation and learner satisfaction variables. Post-hoc Scheffe tests indicated that students in WhatsApp and Facebook delivery groups were characterised by significantly higher levels of perception of user-friendliness and learner motivation than students in the Twitter group. No significant differences were indicated in the post-hoc test between students in the WhatsApp and Facebook groups on these two variables. Regarding the learner satisfaction variable, post-hoc Scheffe tests confirmed that students in the WhatsApp group were typified by a significantly higher level of satisfaction than students in either Facebook or Twitter groups. Results of a post-hoc Scheffe test confirmed that students in the Facebook group were characterised by a higher level of learner satisfaction than students in the Twitter delivery group.

7 Discussion

The present study examined the comparative contributions of three social network learning delivery platforms (WhatsApp, Facebook and Twitter) to first-year university

social science students' knowledge and understanding of definitions of ethical concepts studied in a semester-long "Introduction to Ethics" foundations course. In addition, the study examined the perceptions of the students regarding the user-friendliness of the three delivery platforms as well as the students' levels of learning motivation and learning satisfaction derived from the learning that they experienced in their studies via the different learning delivery platforms.

Results of statistical analyses of the data collected in this study regarding achievement indicate that students in the WhatsApp and Facebook delivery groups attained similarly high grades on the standardised ethical concept definitions knowledge and understanding assessment with students in the Twitter group achieving significantly lower grades on the same standardised measure. These results confirm results of previous research that indicated that both WhatsApp [10] and Facebook [17] learning delivery contribute to enhanced student learning and achievement. The results are congruent with previous results [33] regarding the disadvantages of Twitter delivery vis-a-vis students' learning and achievement when compared to the contribution of other social networks, such as WhatsApp and Facebook, to students' performance.

Additional results of the statistical analyses regarding the affective attitudinal variables confirm that students who received their learning content through WhatsApp and Facebook delivery were characterised by similar levels of perceptions of user-friendliness and learner motivation that were significantly more positive than the levels of perception of user-friendliness and learner motivation of students who experienced their learning delivery via Twitter delivery. These results confirm research findings about perceptions of user-friendliness and learner motivation especially associated with WhatsApp [11] and Facebook [14] learning delivery as reported by students who experienced learning via social networks. A last finding of the present study showed that students in the WhatsApp delivery group were significantly more positive about learning satisfaction than students in both Facebook and Twitter delivery groups, with students in the Facebook group indicating a significantly higher level of learner satisfaction than students in the Twitter group. This result is congruent with research results reported by Echenique et al. [13] regarding the relative advantage of WhatsApp learning delivery over delivery by either Facebook or Twitter.

8 Conclusions

It may be speculated that the use of WhatsApp and, to a lesser extent, of Facebook platforms, can enhance students' learning achievement significantly more than the use of the Twitter platform. Moreover, the use of these platforms seems to promote more positive feelings of user-friendliness, learner motivation and learner satisfaction. This result can be ascribed to the comprehensiveness of WhatsApp and Facebook styles of communication which are virtually unlimited when compared to a short communication style that characterises Twitter. In addition, WhatsApp, more than Facebook and Twitter, is more hermetically sealed against infiltration of unwanted members who could disrupt the learning process, with Twitter especially open to infiltration of members not interested in the learning process.

It also appears that, despite the vast popularity of Twitter as a means of communication within social communities, students do not rate Twitter as an efficient learning delivery platform that positively contributes to achievement or positive affective attitudes when compared to WhatsApp or, to a lesser extent, to Facebook as learning delivery platforms. Thus, it may be concluded from the results of the present study that students are positive about WhatsApp, and to a lesser extent, about Facebook delivery of learning regarding key variables such as student achievement, as well as learner perception of user-friendliness, learner motivation and learner satisfaction. The results also indicate that Twitter is not considered by students to be as effective as WhatsApp and Facebook as a medium of learning delivery. On the whole, results of the present study confirm and emphasise earlier research findings [1, 2] that clearly indicated that social networks, and especially WhatsApp and Facebook applications, can serve as viable platforms for the delivery of learning content via mobile learning technology.

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