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Research Article

The influence of teacher educational and technological factors on video-based pedagogical responses in Jordan: An integrative mixed methods study

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This study examines the extent of influence educational and technological factors have on the level of engagement of the video-based pedagogical responses, and by extension the level of acceptance and use of video technology in teaching, in the context of secondary school teachers in Amman city, Jordan. Educational factors considered were type of school, teaching experience, teaching grade and subject been taught. Technological factors considered were access to the internet and whether teacher has IT support. An integrated mixed method approach was used incorporating both quantitative and qualitative techniques. The ANOVA statistical analysis method was used for the quantitative analysis component. Results from this study were then viewed through the lens of the Technology Acceptance Model theoretical framework for additional insight. It was found that not all the educational and technological factors considered have a statistically significant influence on teachers' level of engagement of the video-based pedagogical responses. The only factor that has a statistically significant influence over all components of the video-based pedagogical responses is the subject being taught, in particular, science-related subjects. In other words, teachers who taught science-related subjects were found to engage in all components of the video-based pedagogical responses. Therefore, according to the interpretation of the Technology Acceptance Model framework in this study, teachers who teach science-related subjects will likely lead to acceptance and use of video technology by both teachers and students due to usefulness and ease of use being perceived. Acceptance and use of video technology will likely lead to an enhanced pedagogical outcome.

Keywords: Video-based pedagogical responses; Educational factors; Technological factors; ANOVA; Quantitative; Qualitative; TAM students

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1. Introduction

The increasing prevalence of technology in education is driving the viability and availability of online teaching and open academic resources and video-based technology is playing a role in facilitating these developments (Bates, 2019; Fokides & Arvaniti, 2020). Woolfitt (2015), for example, believes that, "Education is undergoing a major shift" and that "brick-and-mortar

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classrooms are opening up to rich media content, subject matter experts, and to one another" (p. 5). This swift change has largely been influenced by technological trends and enthusiasm of people of all cultures, as well as the rise of the use of videos and widespread access to the internet. As video becomes increasingly available, the impact within the classroom continues to influence the educational process and changing education (Woolfitt, 2015). The use of videos currently dominates internet bandwidth. According to Ajloni (2019), "globally, total internet video traffic (business and consumer, combined) will be 77% of all internet traffic in 2019, up from 59% in 2014" (p. 13). High quality videos can be streamed quickly via mobile devices in an educational context. This shift is seen in the progress made, considering it took 12.5 minutes to download a song in 2002 and only 18 seconds to do likewise in 2014 (Ajloni, 2019). Therefore, the increasing prevalence of videos in everyday life is reflected in how it is used within the educational environment (Ajloni, 2019), and how the knowledge invested in such an application is now being used within the classroom. A number of studies (e.g., Voogt et al., 2013) have conceptualized this knowledge of integrating technology in teaching and learning including how teachers respond to the use of video technology (VT), which is defined as "digitally recorded content[s] containing sound and motion that can be streamed, stored or delivered live" (Woolfitt, 2015, p. 4), in their teaching practice.

Ajloni (2019) explored different pedagogical responses involved in the use of VT in teaching in relation to the roles they play in classroom settings. These responses are attitudes that shape how teacher use VT in their teaching practice. Attitudes are generally the way one consistently responds to things or class of objects and the processes that influence life's practices (Ostrom, 1969; Poulou & Norwich, 2002). Ajloni (2020) identified five video-based pedagogical responses (VPBRs), which include the selection of appropriate video content by the teachers as part of their behaviour response (video selection), choosing a conducive learning environment or classroom for playing educational videos, which is also a behavioural response (video environment-fit) and the cognitive response involving the recognition of the role of teachers in using VT within the classroom (role awareness). These first three processes are likely to lead to another two aspects: a cognitive response that involves the exploration of other innovative ways of teaching using VT (creative) and the affective response in which teachers ascribe value and emotionally attached to using VT for educational purposes (value attribution) (Ajloni, 2019). The video selection process involves engaging in activities that combine online video tools with other applications such as live streaming instructional videos and using social media platforms to engage a community of students interested in a particular content (Tamim, 2013). Such activities enable teachers to compare selected learning videos across different cross-cultural contexts in order to enrich the learning experience of students. This can be an exhausting activity that involves comparing a wide-range of educational videos across multiple platforms. As for the environment-fit response, teachers are responsible for finding a conducive classroom environment that is adequate for integrating VT. A well-fitted classroom environment for the use of VT should be built in such a way that it incorporates most of the technological tools and resources needed to make video-based learning effective (Stempleski & Arcario, 1992). The production and use of educational videos involve equipping the classroom with the appropriate technological resources and requires learners to adopt more active roles (Engin, 2014).

In addition to the selection and environment-fit responses, the role awareness response is an important pedagogical response in video-based learning, which involves the role of the teacher when using or creating videos for classroom use. This could also include moderating the time and controlling and creating educational videos (Szpunar et al., 2013). The creative response is an extension of the role-awareness response whereby teachers explore alternative roles of teaching leaders. For instance, students aged 10 to 14, after playing the video game Darfur Is Dying were more willing to help Darfurian people than those who had merely read about the situation in Darfur (Peng et al., 2010). Those who played Homeless: It Is No Game felt increased sympathy for homeless people (Lavender, 2011), and after playing Spent, students between 12 and 18 years

demonstrated higher levels of active learning about the situation of poor people (Ruggiero, 2014). The attribution response is the value attached to using VT for teaching practice, which has been attributed to the benefits of this modern technology (Hsin & Cigas, 2013; McKinney et al., 2009). This pedagogical response helps teachers to maximise their teaching time, establish effective classroom management; provide multi-modal instruction and greater motivation (Allison, 2015).

In terms of the educational factors that shape teachers' use of VT, research suggests that the differences between public and private school teachers may contribute to variances in how teachers use of VT (Baker, 1996; Choy, 1997; Han et al., 1996). The variations between public and private schools are based on a number of factors including funding and support, social class and the quality of teachers and students. This implies that the use of VT is likely to be prevalent in schools with sufficient funding and financial support, whether from the public or private sector. Another study (Ajloni, 2019) found that the teaching experience of teachers may be one of the factors that influence the way they respond to the use of VT, since teachers with longer teaching experience may have acquired sufficient technical skills needed to integrate technology into the classroom. Similarly, another important educational factor that might shape the learning of technology skills is the taught subjects of the teachers since certain disciplines (e.g., STEM) may require explanatory videos to clarify complete terminologies in the content compared to those in less complex disciplines (Cheung & Slavin, 2013).

Similarly, there are reasons to believe that technological variables may shape how teachers respond to the use of VT. The advancement of video-based learning and pedagogy, according to Georgina and Olson (2008), has been much slower due to issues of accessibility and institutional support, despite the widespread usage of technology in most schools. IT support mostly involves the maintenance and deployment of VTs for educational purposes, while internet access is the capacity of teachers and schools to connect to and access the internet using computer and mobile devices such as smart phones, laptops, and personal computers. These two issues have also led to low level usage of technology-based pedagogy (Ertmer, 2005) and teachers with institutional support and those with proper access to the internet may vary in the way they respond to the use of VT. These technological factors may influence how they apply the knowledge they have learned due to proper support and access in the use of VT in teaching practice (Koehler et al., 2014).

1.1. Objective of This Study

Understanding the types of educational and technological factors that shape the teacher video-based pedagogical responses (VBPRs), as defined in the section above, to the use of VT would help clarify the characteristics of teachers who are integrating technology into their teaching practice. This study examines the extent of influence educational and technological factors have on the level of acceptance and use of video technology among secondary school teachers in Amman city, Jordan, which is a small country located in the center of the Middle East.

The number of schools employing Video Technology (VT) in Jordan is expected to increase dramatically in the near future (Oliemat et al., 2018), since the Jordanian Ministry of Education (MoE), in conjunction with UNICEF and private schools, has launched its 'Digital Schools Program' to provide students with various technological devices for their learning. Therefore, understanding how teachers' adaptation of educational VTs in the classroom can translate to effective pedagogical practices is paramount (Samak, 2013).

Whilst VT is widely adopted in teaching practice in various parts of the world, it is less prevalent Jordanian schools. This study focuses on the use of VT as it is an emerging technology in Amman and not yet widely adopted by teachers due to lack of experience with this type of technology.

1.2. Video Technology and Acceptance – A Theoretical Perspective

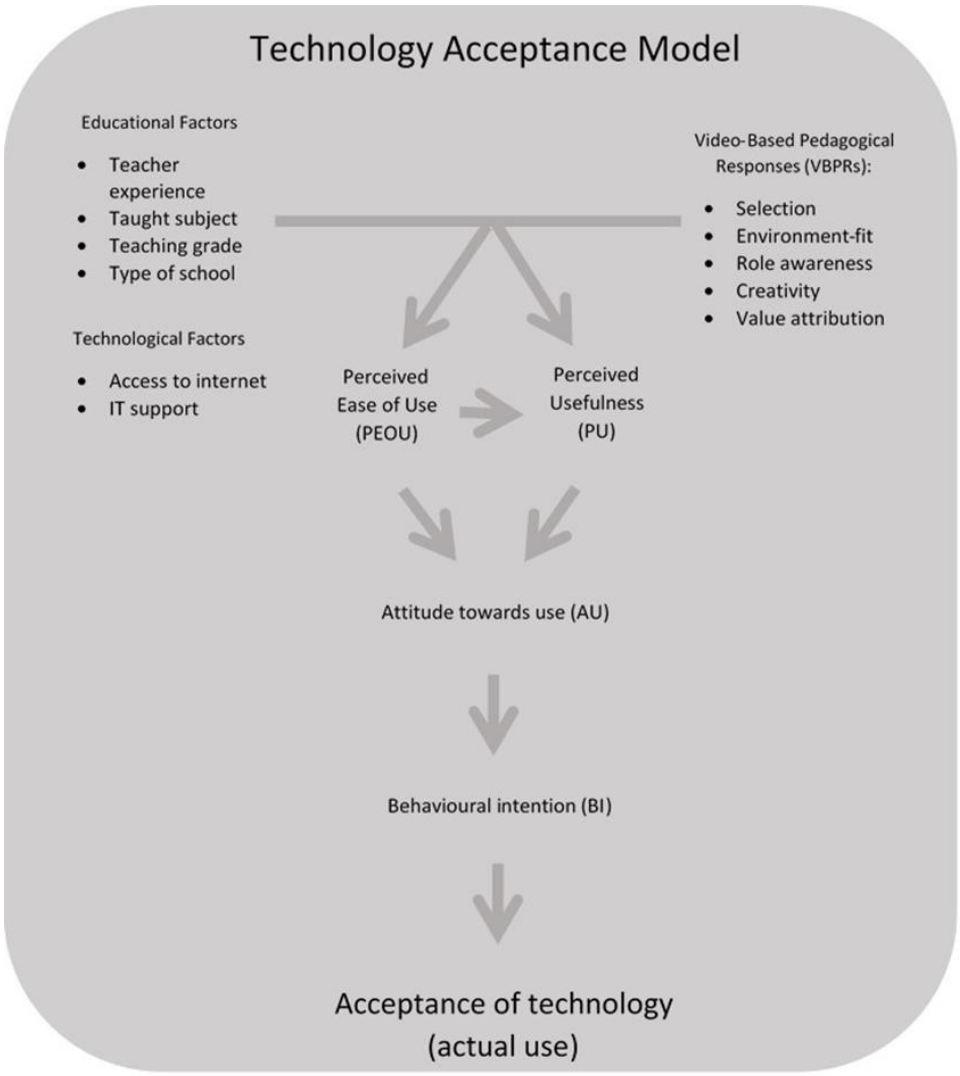
The outcomes of this study are viewed and interpreted through the lens of the Technology Acceptance Model (TAM). The first Technology Acceptance Model (TAM) was updated by Davis based on the "Theory of Reasoned Action" and "Theory of Planned Behavior" (Fishbein & Ajzen,

1975). The TAM was initially conceptualised by Davis (1989) and it postulates that the level of adoption of technology in teaching practice is related by certain perceptions including perceived usefulness (PU), perceived ease of use (PEOU), attitude towards use (AU) and behavioural intention (BI). The definition of PU is the extent to which a person believes that using a system (being VT in the context of this study) will increase the performance of a task, and PEOU is defined as the extent of a person's believe that it is effortless in using the system. The definition of BI is the "measure of the strength of one's intention to perform a specified behavior" (Davis, 1989, p. 984), whereas AU is defined as "an individual's positive or negative feeling about performing the target behavior (e.g., using a system)" (Fishbein & Ajzen, 1975, p. 216)

The TAM in the context of this study is diagrammatically illustrated in Figure 1. The external variables are educational factors and technological factors. Educational factors include the level of experience of the teacher, subject being taught, teaching grade and type of school (public or private). Technological factors include whether teachers have access to the internet and whether they have sufficient IT support. The other external variables considered are the five components of the VBPRs. The present study examines the extent of influence of the educational and technological factors on the level of engagement of the VBPR. The higher the level of engagement, the more likely PU and PEOU are positively present in both teacher and student. This would in turn lead to the positive attitudes of teacher and students (AU) towards the use of VT, subsequently leading to the intention of use (BI). This sequence of behaviour would ultimately lead to the VT as being accepted or successfully adopted by both teacher and students (actual use). Acceptance and use of VT will likely lead to an enhanced pedagogical outcome (Nagy, 2018). It should be noted that PEOU affects PU, which also mediates the effect of PEOU on attitude towards use (Davis et al., 1989).

This interpretation of the TAM is best illustrated with an example. It may be a natural perception that a more experienced teacher (and older by inference) prefers the traditional method of teaching (i.e., the use textbooks rather than adopting VT) (Czaja & Sharit, 1998; Myers & Conner, 1992). The experience of the teacher is one of the educational factors considered in this study. When an experienced teacher tries to integrate VT into the classroom, his/her deeper experience and understanding of the subject matter compared to younger teachers may result in a higher propensity to selecting the appropriate video (Vedantham, 2011) as part of the selection pedagogical response. However, the teacher may be disinclined to be creative (unwilling to use creative forms of VT such as interactive video games or augmented reality etc.). He/she may also be ascribing less value to the use of VT and be less aware of his/her role as a teacher (perhaps because they prefer the use of textbooks rather than new technologies, and the use of VT disconnects them from their comfort zone). Furthermore, they may not be sufficiently experienced with VT to be able to utilise it in the appropriate environment for effective learning. In this example, the teacher is engaging in only one component of the VBPRs (selection response) out of the five components. Due to this lack of VBPR engagement, the ease of use and usefulness perceptions of the VT will be dampened along with its acceptance as an effective teaching and learning tool. In order to raise the propensity of VT being accepted by both student and teacher, the teacher will need to engage in the other four pedagogical responses (environment-fit, role awareness, creativity and value attribution) (Ajloni, 2019). This may be achieved, for instance, through continuing professional development of the teacher.

Figure 1
Technological Acceptance Model (TAM) in the context of this study



As a way of illustration, another factor that could affect the acceptance of VT as an effective teaching and learning tool is a teacher's access to the appropriate IT support in the school, which is one of the technological factors considered in this study. If a teacher enjoys the appropriate IT support, he/she may be more inclined to engage in all components of the VBPRs. Due to having IT support, the teacher can have access to IT hardware and infrastructure that requires a level of audio-visual technical knowledge that would otherwise be beyond reach (such as using a surround sound system in a dedicated theatre) (Adely, 2004; Consiglio & Veer, 2015; Kilburn, 2014). Instead of spending unproductive (not teaching related) time in resolving IT issues, or trying to tackle technical matters, the teacher may afford to act more as a teacher and be more aware of his/her role as teacher. He/she can now spend more time in carefully selecting the appropriate video content and be able to showcase the videos in an appropriate environment with the right hardware. The teacher can now be free to be creative in his/her approach to VT, such as engaging in the use of interactive video games, knowing that doing so will ascribe value to students by way of enhanced knowledge transfer. In this example, if the teacher is provided with the appropriate IT support, he/she is likely to engage with all components of the VBPRs thus resulting in a perceived usefulness and ease of use of the VT. The acceptance of the VT as an effective tool for teaching and learning will thus likely follow.

This study adopts the TAM theoretical perspective because it is commonly employed in many studies and underpins highly predictive models of IT adoption in some studies (Adams et al., 1992; Davis, 1989; Davis et al., 1989; Fathema et al., 2015; Lee et al., 2003; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000). Though TAM was designed to study technology acceptance decisions across different organizational settings and user population, research on TAM's application in the education sector has been limited in the past (Teo, Lee, & Chai, 2008). However, adopting TAM as an explanatory tool in investigating e-learning processes has become a trend recently (Fathema et al., 2015; Park, 2009) although no direct studies have been undertaken on the use of VT in teaching practice through the lens of the TAM theoretical perspective.

Despite the widespread adoption of the TAM framework, several writers and researchers have criticised the model (e.g., Bashange, 2015; Zahid et al., 2013). Bashange (2015) suggests that a great deal of the relevant available literature that refers to the TAM tends to regard it as a dependent variable, rather than a means of determining the factors which influence behaviour. The criticism advanced by Zahid et al. (2013) suggests that the TAM does not consider educational factors as external variables which could influence willingness to use technology. Conversely, it could be contended that it is extremely problematic to measure behaviour, which is often motivated by hidden personality traits. Accordingly, potential users of technology may not necessarily base their acceptance of and willingness to use it on their perceptions of the usefulness and accessibility of IT, although the model does suggest that there may be other external factors which could account for their acceptance of the technology (Ajibade, 2018).

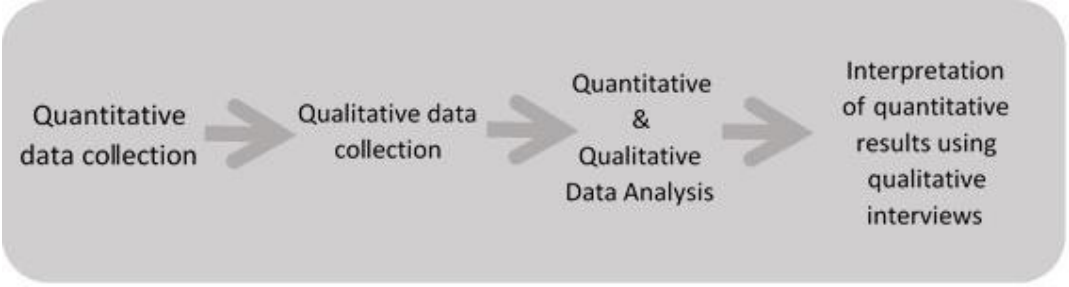
2. Method

This study employs an integrated mixed method (IMM) approach by incorporating both quantitative and qualitative techniques. This design provides a more in-depth understanding of issues being investigated than the use of either a quantitative or qualitative method alone (Creswell & Clark, 2011). This design was chosen to combine the quantitative and qualitative data in order to provide reliable and complementary results. The IMM technique is good for conducting "rigorous data analyses that meet scientific standards of reliable and valid measurement and analysis" (Castro et al., 2010, p. 342). For this reason, quantitative research data via surveys was utilised to provide a baseline measurement of video usage while qualitative research data via structured interviews provided a more detailed account of teacher experiences of VT usage. The IMM approach employed in this study enabled the research question to be treated in ways that triangulate results by unifying participants' responses using quantitative and qualitative data simultaneously. Therefore, this study will "offer the strength of confirmatory results drawn from quantitative (ANOVA) analysis, along with explanatory descriptions as drawn from qualitative (interview) analyses" (Castro et al., 2010, p. 342).

The flowchart of the IMM approach used in this study is illustrated in Figure 2. Details of the survey, data collection and procedures are provided in the subsequent sections below.

Figure 2

Flowchart of the integrated mixed-method approach used in this study



2.1. Survey

The survey was designed to capture the extent of influence of educational and technological factors on the level of engagement of the VBPRs. Educational factors that were considered include teacher experience, type of school (public or private), teaching grade and taught subject. Technological factors that were considered include access to the internet and whether IT was supported in the teachers' school. Further details of these factors can be found in the independent variable section below. The survey was adopted from previous studies that focused on the use of VT in teaching practice (e.g., Allison, 2015; Wyatt, 2016).

Both English and Arabic language versions of the survey was made available to the participants. Surveys that were completed in Arabic were subsequently translated to English after completion. Conversely, surveys that were completed in English were translated to Arabic after completion A professional translator, fluent in both English and Arabic, translated the transcripts.

During the development phase, the survey was reviewed by four scholars to ensure its validity and that it is fit for purpose. The final version of the survey that was presented to the participants consisted of 59 questions relating to the demographic background information of the teachers and their experiences with the use of VT. There were three sections: demographic background (Section A), measures of aspects of using VT (Section B), and invitation for a follow-up interview (Section C). It was administered in a paper format and can be completed in approximately 15 minutes. It had mostly 4-point Likert-type scale ratings with some open-ended questions.

2.2. Participants

The survey targeted Jordanian secondary school teachers in Amman city, Jordan. Interested participants were given the opportunity to opt in and complete the survey if instructional videos were used in their teaching practice. A total of 378 teachers, from 632 interested participants had fallen into this category and completed the survey. Data collected from these participants (N=378; age mean of 37.2, SD = 7.9) were used for quantitative analysis.

The majority of the teachers were females (58%) with males making the remaining portion. Teachers working in public schools (64%) exceeded those in private schools (36%). Amman city has nine districts and the survey ensured that teachers from all districts were recruited. The regions of Amman where participants were recruited are the University district (13%), Al-Jiza (9%), Kasaba (12%), Al-Quesmah (16%), Al-Muwaqqar (10%), Sahab (7%), Um al-Basatin (Marka) (13%), Na'oor (7%) and Wadi al-Sayr (13%). The director of education in each of the nine districts provided names of public and private schools in the region, thus helping in the distribution of surveys to teachers in those regions. A summary of the profiles of the participants is shown in Table 1.

Qualitative data was collected through interviews from a total of 24 secondary teachers who participated in the quantitative survey and indicated an interest to participate in the qualitative interviews. The respondents were coded using a combination of letters, numbers and special characters as follows: a male respondent would be represented as "T1-MUP1*" and a female respondent would be represented as "T2-FUP1**" in order to preserve anonymity. In this particular order, T represents teacher, M represents male, F represents female, P1 represents public school, P2 represents private school, * represents year 11, ** represents year 12, U represents schools in urban areas and R represents schools in rural areas of Amman, Jordan.

Table 1
Demographic characteristics of the participants (N = 378)

Demographical Variables		Percentage
Educational Factors		
Year of Teaching	1 to 15 Years	75%
	16 to 30 Years	22%
	More than 31 Years	3%
Type of School	Public School	64%
	Private School	36%
Teaching Grade	Grade 11	22%
	Grade 12	9%
	Both 11 and 12	69%
Subject Taught	Arabic & Islamic Religion	17.6%
	History	10.9%
	Science	1.6%
	Math	10.9%
	Biology	5.5%
	Management	0.9%
	Design	2.9%
	English	16.7%
	Information Technology in a Global Society (ITGS)	0.9%
	Technology	12.8%
	Physics	4.8%
	Chemistry	6.7%
	Social Studies	7.1%
	Physical Exercise	0.6%
Technological Factors		
Internet Access	Have Internet Access	92%
	Not Have an Internet Access	8%
IT Support	Supported by the IT Department	60%
	Not Supported by IT Department	40%

2.3. Measures and Instruments

2.3.1. Dependent variables

The use of VT in teaching was assessed based on five pedagogical responses discussed in the introduction. The five VBPRs (selection, environment-fit, role awareness, creativity, and value attribution) were measured with Likert-scale questions (items) which were adapted from the Educational Technology Standards Scale (Ajloni, 2019), Play Experience Scale (Pavlas et al., 2012), and Instructional Video Survey (Allison, 2015; Wyatt, 2016).

The number of items relating to each component of the VBPRs vary slightly. The items that relate to each of the components are referred as a subscale. There were five items relating to the video selection response (e.g., "The videos contain pictures/video footage and on-screen text and narration simultaneously"). Six items relate to the environment fit response (e.g., "Students view the videos in small groups"). Five items relate to the role awareness response (e.g., "The videos used are created by the teacher"); Three items relate to the creative response (e.g., "Commercial off-the-shelf video games can be used effectively in formal education settings"). And nine items relate to the value attribution response (e.g., "Video gives me more opportunities to teach my students new things").

Statements were measured on a Likert scale ranging from 1 (Never/Strongly Disagree) to 4 (Always/Strongly Agree), with higher scores for each subscale suggesting a strong use of VT while lower scores indicate otherwise. All subscales used in this study demonstrate satisfactory Cronbach's alpha reliability (video selection, α = .67; teacher's role awareness, α = .75; creativity in video usage, α = .78; and value attributed to video usage, α = .92), except for the environment-fit component that was not reliable at .49 (Ajloni, 2019). It should be noted that the validity and reliability of the five components of video usage investigated in the current study have also been confirmed in other studies (e.g., Ajloni, 2019; Allison, 2015; Wyatt, 2016). However, due to the low reliability of the environment fit subscale, only the other four reliable subscales of the VBPRs (selection, role awareness, creativity, value attribution) were used in this study as a measure of the use of VT in teaching practice (Ajloni, 2019).

2.3.2. Dependent variables

The following educational variables were collected: Years of Teaching (1 = between 1 to 15 years; 2 = between 16 to 30 years; 3 = greater than or equal to 31); Type of School (1 = public school; 2 = private school); Teaching Grade (1 = grade 11; 2 = grade 12; 3 = both 11 and 12); and Taught Subjects (1 = Arabic & Islamic studies; 2 = History; 3 = Science; 4 = Maths; 5 = Biology; 6 = Management, 7 = Design; 8 = English language; 9 = ITGS; 10 = Technology; 11 = Physics; 12 = Chemistry; 13 = Social Studies).

Technological variables included Access to Internet (1 = Have access to Internet; 2 = No access to Internet); and Departmental IT Support (1 = Supported by the IT department; 2 = Not supported by IT department).

2.4. Procedures

Issues of confidentiality, anonymity and informed consent must be addressed prior to the conducting of research (Ajloni, 2019). Therefore, before conducting this study, the researcher sought approval from the relevant stakeholders including the Human Research Ethics Committee (HREC) at the University of Newcastle (with ethics approval number H-2018-0459) and the Jordanian Ministry of Education (MoE). Prior to visiting schools, the researcher was required to secure further clearance from the Amman regional directorates of the MoE, which made it possible to contact the relevant authorities before visiting the schools.

Participation for this study was voluntary and optional, thus participants could withdraw at any time and without any adverse consequences. The Participant Information Statement (PIS) and Invitation to Participants forms included an explanation of research purpose and process; the amount of time required for data collection; the time required of participants; information on protecting participants' rights to know the nature of this study and how data and results would be used and the benefits that will result from the research. After teachers read the PIS, they were able to complete the survey.

Culturally, there is a large power gap between male and female teachers in Jordanian schools (Adely, 2004), which meant that some female teachers could be shy and reluctant to be interviewed. Hence, information from them may be incomplete or even inaccurate because they may not speak frankly or be afraid to tell the truth (Shohel et al., 2015). As a preventative measure, two research assistants (one male and one female) who are aware of such cultural barriers were recruited to handle such matters. Particularly, the female assistant obtained permission from female teachers to audio record their interviews. The researcher's email address, phone number and the contact details of the female research assistants were available to female participants in the event that they had concerns about their participation in the study. Hence, given the cultural values of the Jordanian society as an Islamic nation, the researcher further sought approval from families or husbands of the female teachers before face-to-face interviews with the teachers. This was undertaken with the help of the female research assistant who explained the voluntary nature of the research to the teachers. This process enabled the researcher to collect study data at two stages: stage one (survey) and stage two (interviews). It is important to note that the involvement

of the research assistants did not interrupt the data collection process in anyway. They were recruited to facilitate the data collection 'on the ground' and did not play any role in running the data analysis or interpreting or writing any section of the thesis. The participation of the research assistants was voluntary and without any financial reward.

As part of the ethical consideration, the nature of the survey questions would preserve the anonymity of the participants. The survey questions, as described in the *Dependant Variables* section above, asks "how" VT was used. No data was recorded on what specific videos were used so that the identity of the participants cannot be traced.

As discussed in the *Introduction*, educational and technological factors may shape how (and how much) teachers use VT. The variations in how VT is used are based on a number of factors including funding and support, social class, quality of teachers and students, schools' level of IT support and access to the internet also plays an important role on how (and how much) VT is integrated into teaching.

2.5. Data Analysis

Quantitative analyses were conducted using SPSS, version 25. A descriptive analysis was first conducted to estimate the average means and percentages of the collected data. Then a one-way ANOVA analysis was also conducted to test for the statistically significant differences of educational and technological variables in relation to the roles involving the use of VT. Significance was set at .05.

A prior power analysis was computed using the G* Power statistical software to determine the sample size needed for conducting ANOVA analysis as per the methodology in previous similar studies (e.g., Faul et al., 2007). Using the medium effect size and power of 0.30 and 0.80 respectively, it was estimated that 190 participants would be required for the ANOVA analysis. Given the total number of participants in this study is 378, the sample size met the minimum number needed for the study. Descriptive statistics on the collected data have been summarised in Table 1.

3. Results

Results of the quantitative and qualitative analyses are presented in this section. Analysis results are summarised in Table 2 (educational factors) and Table 3 (technological factors). Only F-scores that were found to be statistically significant are presented. A higher F-score indicates that the teacher is more likely to engage in that pedagogical response.

3.1. Influence of Educational Factors on Video-based Pedagogical Responses

The effects of the educational factors on four components of the VBPRs are presented below. Educational variables include a) year of teaching; b) type of school (public v. private); c) teaching grade of the teachers (grade 11, grade 12, and both 11 & 12); and d) subjects taught (Arabic & Islamic studies, History, Science, Maths, Biology, Management, Design, English, ITGS, Technology, Physics, Chemistry, Social Studies).

3.1.1. Influence of teaching experience

A statistically significant effect of years of teaching was found on the use of creativity in video usage [$F(2, 314) = 4.20$, $p = .016$]. Creativity was not evenly distributed, thus equal number of variances was not assumed based on the Levene's test statistic ($M = 2.94$, $p = .05$). However, the effect size was quite small ($\eta p2 = .03$) but statistical power was adequate at .88. The mean differences within the groups show that teachers with 1 to 15 years (M=5.6, SD=2.5) and 16 to 30 years (M=6.2, SD=2.4) of teaching experience reported higher mean scores in terms of using creativity (e.g., video games) compared to those who have been teaching for over 31 years (M=3.7, SD=1.0). However, there was no statistically significant effect between years of teaching and the three other components of VBPR (selection, role awareness and value attribution).

These findings are supported by the qualitative results. One teacher (T6-FUP1**) indicated that perhaps teachers are not including VT as part of their teaching due to challenges such as not having "sufficient planning background to find suitable videos from the internet. Playing a video without planning is just wasting time for everyone."

One teacher with less than 15 years of experience (T8-FUP2*) said, "I used technology to replace traditional teaching methods, even though it's not possible to replace the entire curriculum. Sometimes the traditional methods are appropriate." This teacher was open-minded and willing to accept new technologies where appropriate.

3.1.2. Influence of the type of school

The results suggest that teachers in public and private schools differ in terms of their use of video as a teaching tool in the classroom. The type of school was found to have a significant influence on the role awareness [F (1, 324) = 11.08, p = .001], creativity [F (1, 315) = 5.60, p = .018] and value attribution [F (1, 317) = 8.79, p = .003] pedagogical responses. There was no statistical significance on the selection of video. These results suggest that teachers in public and private schools differ in terms of their use of VT as a teaching tool in the classroom. In terms of the observed effect between type of school and teacher's role in using VT, it was found that private school teachers scored higher (M=14.4, SD=2.4) in playing a role in the use of video as a teaching tool compared to public school teachers (M=13.2, SD=3.3). Similar patterns of variance were generated in the mean difference on type of school in relation to creativity in teaching, with results showing that private school teachers (M=6.4, SD=2.8) scored higher than public school teachers (M=5.7, SD=2.4). As expected, private school teachers had higher mean scores for creativity (M=29.7, SD=4.1) than public school teachers (M=27.8. SD=6.1), indicating that those in the private sector were open to creative and innovative ways of teaching, especially in the use of VT, compared to teachers in the public sector.

The role awareness result was unevenly distributed and therefore equal number of variances was not assumed based on the Levene's test statistic (M = 6.70, p = .01). The effect size was also small (ηp2 = .03) but the statistical power was strong at .92. Similarly, the value attached to using VT (value attribution) was also not equally distributed, thus equal number of variances was not assumed based on the Levene's test statistic (M = 5.55, p = .02). The effect size was very small (ηp2 = .03) but the statistical power was adequate at .83. In contrast, there was normal distribution of data in the creativity response according to the Levene's test (p = .26), therefore it is assumed that there are equal numbers of variance. While there was very small size effect (ηp2 = .02), the observed power was slightly moderate at .67.

The qualitative results are consistent with the above findings. For example, a private school teacher (T11- MUP2**) has indicated that there is an abundance of VT devices at their disposal. Students can also "bring along their smartphones and because we have Wi-Fi, they can watch the videos individually." In contrast, a public school teacher (T10- FUP1**) indicated that they "lack good equipment" and "we don't have theatre or laptop equipment." This public school teacher also indicated that obtaining more equipment would be unlikely in the near future because "our budget doesn't allow for it." These interview responses anecdotally highlight the technological gap between private and public schools due to budgetary differences.

3.1.3. Influence of teaching grade

It was found that teaching grade has a statistically significant influence on the value teachers attach to using VT in their teaching practice (value attribution response, [F (2, 292) = 4.16, p = .016]) but has no significant influence on the selection, role awareness and creativity responses in terms of VT usage. This contradicts findings from other studies, which found that the selection, role awareness and creativity responses were significantly influenced by the level of teaching grade (e.g., Alqurashi et al., 2016; Alqurashi & Williams, 2017). However, these studies are not specific to Amman nor are they specific to Grade 11 and Grade 12, thus a directly comparison cannot be made.

One respondent (T3-MUP2**) said he uses "video every lesson day in all class levels." He explained further about using video learning, "Material is interactive, and I can include a video or play music or a tape". The post hoc tests suggest that the variable – value attached in using VT – was not distributed evenly and equal numbers of variance was therefore assumed based on the Levene's test (p = .25). In addition, there was very small effect size (ηp2 = .03) and moderate statistical power at .73. The mean differences show that Grade 11 teachers (M=29.9, SD=4.2) attached more value to using video as a teaching tool than those teaching Grade 12 (M=27.1, SD=6.1) and Grades 11 and 12 simultaneously (M=27.8, SD=5.9).

3.1.4. Influence of taught subject

There are statistically significant differences associated with subjects taught by the teachers on selection [F (13, 263) = 4.55, p = .001], role awareness [F (12, 261) = 8.55, p = .001], creativity [F (12, 249) = 5.71, p = .001] and value attribution [F (12, 251) = 17.36, p = .001]. There was unequal distribution of variances in the four dependent variables respectively, based on Levene's test statistics (p = .01 for all the variables). However, with the statistically significant differences in the taught subjects came moderate effect sizes (ηp2 = .18 to .45 for all variables) and strong statistical power of 1.0 in all four variables. In terms of the selection of videos to use, teachers who taught biology had the highest mean score (M = 15.14, SD = 0.36), followed by the score of Information Technology teachers with a mean of 15.0 and Science teachers (M = 14.80, SD = 1.09). This finding is supported by one of the respondents, "I use video to explain it more because the kids engage with it. For example, describing microorganisms, water samples. Biology topics like amoebae are well catered for. Such videos already on YouTube will save us more time. Also, things to be seen through a microscope can be seen more easily" (T2-MUP1*).

Teachers who taught social studies recorded lower mean scores of 9.52 (SD = 3.86) in video selection compared to those who specialise in natural science-related subjects (Biology, ITGS or Science, etc.). It is possible, as noted by one of the teachers in the qualitative interviews, that "Students pick up on [Science] subject[s] very quickly from the videos. The feedback I got from the students was really positive and they achieved good results" (T1-FUP1*).

The value attached to using video for teaching natural science subjects, is further illustrated by JSS teachers below:

"In terms of my experience with VT, I have good experience with using video in the classroom and I find that this helps the students to understand the concepts better than with traditional teaching. In the past three months, I have used video equipment very often, especially when I have the need to teach information about people with autism and also about those suffering from anaemia" (T1-FUP1**).

In the past three months I've used video a lot especially in regard to subjects like geology subjects" (T1-MUP1**).

"I've found that students like to learn from visual, as opposed to practical, stimuli. I like to let them watch a video before anything is explained from the text, maybe 10-15-minute segments. Then I explain from the books and ask for questions. In Computer Science I use videos every day" (T3-MRP1*).

"I've learned a lot as it helped me to explain lessons more easily than traditional ways, especially in scientific subjects that need to be covered in a more practical way to maintain the class's attention. As an example, when explaining the human body, I prefer a video-based explanation as the student's get more from it" (T3-FUP2**).

In addition to teacher selection of video resources, the mean scores of the taught subjects in relation to the teacher's role in video usage were also compared. A similar pattern of higher scores was seen in natural science subjects such as Science (M=15.04, SD=0.54), Physics (M=15.00, 1.85) and Technology (M=14.85, SD=2.29), compared with non-natural science subjects such as Social Studies (M=5.71, SD=4.44), Design (M=12.33, SD=6.50) and History (M=12.25, SD=3.52).

Table 2

ANOVA analysis results of education factors vs video-based pedagogical responses

Demographic Variables	**N**	**Selection** mean (SD)	***F-score (p)***	**N**	**Role awareness** mean (SD)	***F-score (p)***	**N**	**Creativity** mean (SD)	***F-score (p)***	**N**	**Value attribution** mean (SD)	***F-score (p)***
EDUCATIONAL FACTORS												
Type of School												
Public	215	13.2 (3.02)	**(NS)**	211	13.2 (3.31)	**11.08 (.001)**	205	5.69 (2.38)	**5.60 (.018)**	206	27.8 (6.11)	**8.79 (.003)**
Private	116	13.7 (2.65)		115	14.4 (2.38)		112	6.38 (2.57)		113	29.7 (4.11)	
Teaching Grade												
Grade 11	65	13.30 (2.81)	**(NS)**	63	13.67 (2.78)	**(NS)**	62	5.48 (2.29)	**(NS)**	64	29.95 (4.21)	**4.16 (.016)**
Grade 12	24	13.25 (1.59)		29	13.24 (2.72)		29	6.41 (2.86)		29	27.06 (6.13)	
Grade 11 & 12	215	13.23 (3.11)		210	13.46 (3.25)		196	5.78 (2.41)		202	27.84 (5.87)	
Years of Teaching												
1 to 15 Years	247	13.49 (2.92)	**(NS)**	235	13.83 (2.79)	**(NS)**	237	5.59 (2.50)	**4.20 (.016)**	233	28.82 (5.51)	**(NS)**
16 to 30 Years	75	13.20 (2.56)		79	7.1 (6.17)		71	6.17 (2.37)		74	27.27 (5.31)	
31 and above	9	12.33 (4.77)		12	3.67 (1.00)		9	3.67 (1.00)		12	28.25 (7.17)	
Taught Subjects												
Arabic & Islamic studies	45	13.37 (3.16)	**4.55 (.001)**	38	14.07 (1.09)	**8.55 (.001)**	46	5.10 (2.21)	**5.71 (.001)**	43	27.39 (2.89)	**17.36 (.001)**
History	31	13.32 (2.86)		32	12.25 (3.52)		32	6.59 (2.38)		29	27.62 (6.56)	
Science	5	14.80 (1.09)		5	15.04 (0.54)		5	6.00 (2.73)		5	34.00 (2.73)	
Maths	28	11.89 (2.68)		33	13.03 (1.55)		31	7.03 (2.61)		30	28.40 (4.34)	
Biology	14	15.14 (.36)		11	12.54 (2.38)		11	5.72 (2.10)		14	29.78 (3.42)	
Management	3	13.00 (.00)		6	14.00 (1.09)		6	3.00 (0.00)		6	30.00 (1.09)	
Design	9	12.33 (5.22)		9	12.33 (6.50)		9	6.67 (2.78)		6	23.00 (3.28)	
English	44	13.00 (2.07)		48	14.54 (2.30)		42	4.90 (2.15)		45	31.86 (3.57)	
ITGS	3	15.00 (.00)		3	14.00 (0.00)		3	7.00 (0.00)		3	25.00 (0.00)	
Technology	40	14.05 (2.38)		38	14.89 (2.29)		29	6.37 (2.55)		35	32.05 (3.00)	
Physics	15	14.00 (2.85)		15	15.00 (1.85)		15	7.80 (1.89)		15	30.20 (5.53)	
Chemistry	19	13.78 (1.96)		15	13.40 (1.40)		15	4.60 (1.05)		15	27.20 (1.89)	
Social Studies	19	9.52 (3.86)		21	8.71 (4.44)		18	4.00 (1.18)		18	16.50 (8.52)	

Note: NS = Not significant; p < 05

Interestingly, English language teachers (M=14.54, SD=2.30) also played greater roles in teaching with videos in their classrooms than those who taught other non-science subjects. This is no surprise since interview reports from the teachers show that they use online videos as "support [tools] to teach [English language] novel" (T1-FUP1**). This respondent uses video "to explain English language rules."

Furthermore, the mean score of the teachers' creativity is consistent with previous results showing that those in the natural sciences (e.g., Physics M=7.80; Maths M=7.03; ITGS M= 7.00) scored higher than those in the non-science fields (e.g., Management M=3.00; Social Studies M=4.00) in terms of creativity in using video for teaching.

The mean scores for the value attribution were compared based on the taught subjects. A similar trend is observed where teachers in the non-science fields (Social Studies: M=16.50, SD=8.52; Design: M=23.00, SD=3.28) are less likely to value the use of video as a teaching tool compared to their colleagues in the natural sciences (Science: M=34.00, SD=2.73; Technology 32.05, SD=3.00).

3.2. Influence of Technological Factors on Video-based Pedagogical Responses

3.2.1. Influence of internet access

There are statistically significant differences associated with internet access on only two components of the VBPRs: role awareness [F (1, 324) = 8.29, p = 0.004] and value attribution [F (1, 317) = 4.83, p = 0.029]. Teachers with internet access (M=13.8, SD=2.9) played more of a role in using video as a teaching tool compared to those with no internet access (M=12.0, SD=4.0). A similar pattern of variance was seen in the value attributed to video usage: those with internet access (M=28.7, SD=5.3) scored higher than their colleagues without access to the internet (M=26.3, SD=7.8).

Role awareness and value attribution in using VT were unevenly distributed and equal numbers of variances were not assumed based on the Levene's test statistics (M = 8.20, p = .01; M = 5.79, p = .02 respective). While the effect sizes for both variables were quite small (.03 and .02 respectively), the statistical powers were both slightly adequate at .81 and .57.

Interview responses of the teachers revealed that the lack of internet access as an obstacle to their teaching. One of the teachers actually remarked, "If I had access, I'd use the video equipment every day. We only have [Internet at] one lab so I have to pre-book it" (T1-MUP1**). Other teachers commented that "slow internet or interruptions" (T7-MUP2**) and "poor access to the internet" (T7-MUP2**) as a common problem. In contrast, some teachers with access to the internet used it to enhance their teaching practice by adding "a lot of things into the lesson" (T11- MRP2*) such as pictures and videos to capture students' attention since there are "many different types of videos" on the internet (T5-MRP1**).

3.2.2 IT support and video-based pedagogy

Findings from the qualitative interviews suggest that teachers face challenges when accessing IT equipment. There are statistically significant differences in selection response [F (1, 325) = 9.22, p = .003] and value attribution response [F (1, 314) = 3.77, p = .053], which varied based on the IT support provided by schools. As expected, teachers who are supported by their school departments consistently scored higher in two aspects of video usage involving the selection of video (M = 13.6, SD = 2.9) and value attributed to using video (M = 28.6, SD = 5.6) compared to those suggesting dissatisfaction with support (M = 11.7, SD = 2.5 for selection response; and M = 26.4, SD = 4.7 for value attribution response).

Variances of both variables are assumed to be equal based on Levene's tests (p = .74 and .51 respectively). There were very small effect sizes for both variables (ηp2 = .03 and .01 respectively) and statistical power of between .47 to .85.

Table 3
ANOVA analysis results of technological factors vs video-based pedagogical responses

Demographic Variables	**N**	**Selection** mean (SD)	***F-score* (*p*)**	**N**	**Role awareness** mean (SD)	***F-score* (*p*)**	**N**	**Creativity** mean (SD)	***F-score* (*p*)**	**N**	**Value attribution** mean (SD)	***F-score* (*p*)**
TECHNOLOGICAL FACTORS												
Access to Internet												
Have Access	303	13.4 (2.92)	**(NS)**	299	13.76 (2.93)	**8.29 (.004)**	295	5.92 (2.51)	**(NS)**	291	28.65 (5.26)	**4.83 (.029)**
No Access	28	12.8 (2.75)		27	12.00 (4.02)		22	6.09 (1.97)		28	26.25 (7.79)	
ICT Support												
Supported by the department	304	13.57 (2.88)	**9.22 (.003)**	300	13.58 (3.00)	**(NS)**	293	6.03 (2.47)	**(NS)**	290	28.58 (5.61)	**3.77 (.053)**
Not supported by the department	23	11.69 (2.47)		23	13.52 (3.87)		20	4.95 (2.08)		26	26.38 (4.71)	

Note: NS = Not significant; $p < .05$

Findings from the qualitative interviews suggest that teachers face challenges in accessing IT equipment. One teacher commented, "We don't have classroom-based equipment and I have to show videos in the computer lab" (T1-MUP1**).

Another teacher corroborated, "I have good experience with using video, but we lack equipment. I have to buy it all and bring it in from outside one or two days each week to my school. Classrooms need to be organised one or two days beforehand for video lessons. I teach a technology-based lesson each Monday so I try to gather students together to watch a topic via video. There's a lot of equipment and it's hard to carry it all so I have the classes just one or two days a week to cater for this" (T2-MUP2*).

Similarly, a lack of IT equipment has inhibited the use of VT for one teacher, "I've never videoed myself due to lack of equipment" (T3-FUP2**).

4. Discussion

This study examines the extent of influence educational and technological factors have on the level of engagement of the Video-Based Pedagogical Responses (and by extension the level of acceptance and use of VT in teaching) in the context of secondary school teachers in Amman city, Jordan. This would help clarify the characteristics and ascertain deeper insight of teachers who are integrating VT into their teaching practice. This section discusses the results presented in the previous section in more details.

4.1. Influence of Educational Factors on Video-based Pedagogical Responses

4.1.1 Teacher experience

It was found that more recently trained teachers are more likely to use VT as an innovative tool, or are more creative when using VT, compared to those who have been teaching for longer. However, the level of teaching experience has no significant influence on the engagement of selection, role awareness and value attribution responses. This may be attributed to a training effect rather than an age effect. This result is indicative of the generational gap between the teachers in terms of the usage of VT.

Qualitative results are anecdotally consistent with this finding. As indicated in the results section, a teacher with less than 15 years of experience commented that she used technology to "replace traditional methods" (T8-FUP2*). More experienced teachers did not expressly indicate unwillingness to adopt VT in their teaching, however, did not explicitly indicate that they were open-minded in this regard either.

In accordance with the TAM, since experienced teachers are less inclined to engage in the VBPRs than recently trained teachers, this suggests that experienced teachers are less likely to make VT accepted as an effective teaching and learning tool due to the lower likelihood of producing positive perceptions of usefulness and ease of use. However, recently trained teachers are only inclined to engage in the creativity response in the VBPRs (rather than all five components), thus cannot be considered as highly engaged in the VBPRs in the first instance. It can thus be argued that both experienced and recently trained teachers can enhance the acceptance of VT in their teaching practice (therefore achieving an improved pedagogical outcome) by encouraging them to be aware of and engage in all components of the VBPRs.

4.1.2 Type of school

This study found that the type of school (private vs. public) is an influential factor on a teacher's pedagogical response in terms of role awareness, creativity and value attribution in relation to the use of VT in their teaching practice. In other words, private school teachers are more likely to engage, or more deeply engaged, in these three components of the VBPRs than their public school counterparts.

In accordance with the Technology Acceptance Model (TAM), this result suggests that private school teachers and students are more likely to accept VT as an effective teaching and learning tool

than public school counterpart due to private schools being more engaged with the VPBRs. With public schools trailing private schools on this aspect, this result could perhaps contribute to the argument that more attention is required on public school on this issue. Though private schools are more engaged in VT than public schools, this result highlights that there may be room for improving further the acceptance of VT in private schools by encouraging teachers to be more engaged with the selection and environment-fit responses.

This is not a surprising result as private school teachers are at the forefront of teaching innovation in respect of the use of VT. This is because private schools are better funded (not relying entirely on government funding) and are better equipped in terms of VT (such as interactive video games that may aid in teaching) compared to public schools that rely entirely on government funding (Alkhawaldeh & Menchaca, 2014). Besides, international teachers in private schools may be at the forefront of this blended teaching technique (e.g., the use of video games or other forms of VT) as they bring their international experience to the classroom compared to local public teachers who may lack similar competitive experience (Ministry of Education, 2018). Teachers in private schools may have greater access to appropriate technological tools.

As indicated in the results section, this is supported by some of the interview responses where some public school teachers indicated that they "lack good equipment" (T10- FUP1**) and that it would likely remain this way because their "budget does not allow for it" (T1-MUP1*). On the contrary, a private school teacher indicated they there is an abundance of technological devices and that students can "bring along their smartphones and because we have Wi-Fi, they can watch the videos individually" (T11- MUP2**).

Nonetheless, the number of Jordanian schools integrating VT in their classrooms is expected to increase since the MoE, in conjunction with UNICEF and the private sectors, has recently launched its 'Digital Schools Program' to provide disadvantaged schools and children with modern VTs (Oliemat et al., 2018).

4.1.3 Teaching grade

Teachers who taught Grade 11 students are more likely to ascribe value, or attribute more value, to using VT in teaching than those who taught only Grade 12. This result is supported by the interview data showing that such teachers (e.g., T1-MUP1**) found value in using VT because the content was "interactive" and since he recorded his pedagogical activities during his classes "every lesson day". Teachers who taught Grade 12 students may have limited time since they are trying to cover the student curriculum before their final Tawjihi examinations (final examination in Grade 12) compared to Grade 11 teachers who may still have extra time (approximately one year) before preparing the students for the Tawjihi. Textbooks are very important in preparing for the Tawjihi, especially since the Grade 12 curriculum is extensive and require a good amount of time to cover (Alghaswyneh, 2012; Hodges, 2015). Government policy mandates the use of such school textbooks for Grade 12 students, rather than VT devices. This is to ensure that students are not distracted from commitment to their studies by online learning or entertainment platforms. This incentive was introduced with the hope that a good percentage of students qualify for university entrance. Likewise, teachers in Jordan (especially those in public schools) believe that traditional approaches using school textbooks are the most effective way of covering the school curriculum and transferring knowledge (Phan et al., 2016; Rocha et al., 2018).

As indicated before, due to the rigorous nature of the Tawjihi curriculum, it was found that the traditional textbook method of teaching would be more appropriate for this grade of study (Alghaswyneh, 2012; Hodges, 2015). However there would be value derived from Grade 11 teachers adopting VT in the classroom as it has been demonstrated to enhance learning outcomes in demanding curriculums (Nagy, 2018). As per the TAM, this may be achieved by advocating the acceptance of VT in the classroom by elevating the perception of its usefulness and ease of use. This could be accomplished by informing teachers of the significance of the VBPRs in relation to the effective use of VT in teaching, and more importantly, encouraging teachers to adopt all

components of the VBPRs. Grade 11 students could also benefit from the elevated usage and acceptance of VT if teachers deploy all remaining components of the VBPRs (i.e., selection, environment-fit, role awareness and creativity) rather than the value attribution response alone.

4.1.4 Taught subject

The subject taught by teachers has a statistically significant influence on all components of video usage. Teachers who taught science-related subjects are more likely to engage in all components of the VBPRs, or are more deeply engaged in the VBPRs, compared to non-science teachers. As indicate in the results section, qualitative interview data supports this finding.

Interestingly, interview responses from English language teachers indicated that they also needed videos to further explain complex topics and to "save [them] time". This might be because the teachers are non-native English language speakers, hence turning to online video to prepare their classes and furnishing the students with the relevant up-to-date lessons and illustrations. Another inference is that teachers who teach English grammar are more likely to refer to an online video that is already available in educational websites.

One possible way to improve the acceptance of VT for non-science related teachers to be cognisant of, and engage in, the VBPRs. As per the TAM perspective, doing so will enhance the PU and PEOU of the technology in both teacher and student, thereby resulting in its general acceptance in the classroom as an effective teaching aid. This will ultimately likely lead to an enhanced pedagogical experience and outcome for both teacher and student.

4.2. Influence of Technological Factors on Video-based Pedagogical Responses

Two technological factors were analysed for their extent of influence on the teachers' engagement of the VBPRs in their teaching practice. These factors are internet access and whether they have IT support.

4.2.1 Access to internet

It was found that internet access has a statistically significant influence on only two components of the VBPRs, namely role awareness and value attribution. That is, whether a teacher had access to the internet was an influential factor. This result does not come as a surprise since some studies have highlighted the significant role of access to the internet in teaching practice (e.g., Jamieson-Proctor et al., 2009).

Interview responses of teachers is also found that access to the internet was an influential factor in determining whether VT is adopted into their teaching practice. As indicated in the results section, teachers have indicated that poor connection and constant internet interruptions were common obstacles. One teacher indicated that the use of VT would be welcomed if it is more available. One obvious way to improve the acceptance of VT is to make the internet available to all teachers. Teachers who already have internet access might further improve on the acceptance of VT in the classroom if teacher behaviour is consistent with all components of the VBPRs rather than the role awareness and value attribution responses alone. Doing so will enhance the PU and PEOU of the technology in both teacher and student in the TAM perspective, thereby resulting in its general acceptance in the classroom as an effective teaching aid.

4.2.2 IT support

Differences in departmental IT support was found to have a significant influence on the selection of video and value attached to video usage. This is also supported from the qualitative findings, with teachers noting the lack of video-technological equipment or IT support from their respective departments. This may explain the variance between teachers who scored higher in their selection of video and value of using VT due to the support they receive from their IT departments, compared to who scored lower on these aspects because of the lack of support from their school or IT department.

Perhaps schools should take note that a supportive environment, where the technological

aspirations of their teachers can be supported, may enhance their students learning outcomes. Doing so may improve the positive perception of VT in the minds of students and teachers, thus increasing its acceptance as an effective tool for teacher (in accordance with the TAM perspective) and an improved learning experience may naturally follow.

5. Limitations and Recommendations

The cross-sectional nature of the study amplifies the limitations of self-reporting. Repeated surveys in a longitudinal study design could potentially enhance the results or bring the current results to question. This study was conducted in the capital city of Jordan and so the results may not represent the views of secondary school teachers across the entire country. Although there was a reasonable sample size for the interviews (N=24), it may not be representative of all teachers in Jordan. The teachers in this sample (being from the capital city) have greater access to VT than other regions because Amman is the capital and technological hub of Jordan. Therefore, further studies could explore the extent to which VT is used for teaching in the entire country with nation-wide representative data.

The requirement that Grades 12 teachers finish their curriculum before the students' Tawjihi national examinations limited their participation in the study and thus lessened the impact of their perspective on the data. Perhaps a further study that focuses on this particular category of teachers would be helpful in creating a better understanding on how VT can help ease some pressure off Grade 12 teachers.

The IMM approach used in conducting this study was necessary for time management, but it limited the analysis of the qualitative data that emerged from the interview phase. Generation of relevant themes from the wealth of data contained in the transcripts was constrained by the desire to make connections with the quantitative survey data. Further studies, or subsequent analysis of the present data, could adopt a sequential explanatory mixed methods approach, where data from each component are discussed in length to complement each other.

6. Conclusion

This study examined the extent of influence educational and technological factors have on the level of engagement of the video-based pedagogical responses (and by extension the level of acceptance of video technology in teaching) in the context of secondary school teachers in Amman city, Jordan. Educational factors considered were teaching experience, subject being taught, teaching grade and the type of school. Technological factors considered were access to the internet and whether the teacher there was sufficient IT support. The video-based pedagogical responses consist of five components, namely selection, environment-fit, role awareness, creativity and value attribution.

An integrated mixed method approach was used in this study. A survey and series of interviews were conducted on secondary school teachers in Amman. Based on data from the survey, a quantitative ANOVA analysis was undertaken with the results interpreted in relation to interview responses. It should be noted that the environment-fit pedagogical response has been excluded from the quantitative analysis due to the unreliability of the survey items in relation to its measurement (low Cronbach's alpha value).

It was found that not all the educational and technological factors considered have a statistically significant influence on teachers' level of engagement of the VBPRs. Factors that were found to have a significant influence on the selection response were the taught subject and level of IT support. Factors that were found to have a significant influence on the role awareness response were type of school, taught subject and access to the internet. Type of school and taught subject were found to have a significant influence over teacher's level of engagement with the creativity response, whilst the value attribution response was found to be significantly influenced by all the factors considered apart from the level of IT support.

In terms of the acceptance of video technology usage by both teacher and student, the only

external factor (out of the ones considered in this study) that has a significant influence over all components of the video-based pedagogical responses is the subject being taught. Teachers who teach science-related subjects were found to engage in all components of the video-based pedagogical responses. Therefore, according to the interpretation of the TAM framework in this study, teachers who teach science-related subjects will likely lead to acceptance and use of video technology by both teachers and students due to usefulness and ease of use being perceived. Acceptance and use of video technology will likely lead to an enhanced pedagogical outcome (Nagy, 2018). The other external factors considered in this study do not have significant influences over all components of the video-based pedagogical responses (partial engagement). Teachers who are partially engaged may need encouragement to fully engage in the video-based pedagogical responses to elevate the acceptance and usage level of video technology (and enhanced pedagogical outcome by extension).

This study is crucial for two reasons. It is a baseline study that could help researchers build on the current results and could assist teachers in Jordan and education decision-makers in the Jordanian Ministry of Education (MoE) to understand and make more effective use of video technology in the educational sector. It also provides an understanding of teachers' adoption of educational video technologies and its implications to pedagogical outcomes.

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