




The Predictive Effect of Technology Follow-up and Professional Competence on Job Satisfaction of Physical Education Teachers

Nurullah ÇELİK*¹  Oğuzhan YILDIZ¹  Şehima AKSU¹ 

¹Department of Physical Education and Sport, Sakarya University of Applied Sciences, Sakarya, Türkiye

Keywords

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ABSTRACT

The study aimed to determine the predictive effect of technology follow-up and professional competence on the job satisfaction levels of physical education teachers. A correlational survey was used in the study. The study sample consists of 217 physical education teachers. Participants in the study were determined by the convenience sampling method. To collect data, the "Personal Information Form," "Teachers Self-Efficacy Scale," and "Job Satisfaction Scale" were used in the study. Descriptive statistics, Pearson correlation analysis, and hierarchical regression analysis were used for analysis. According to the results, a significant positive relationship was found between the frequency of technology follow-up and job satisfaction ($r = .230$, $\beta = .25$, $p < 0.05$). Included in the model in the third step, the contribution of professional competence to job satisfaction is significant and explains 16.5% of job satisfaction. As a result, it was revealed that teachers perceive themselves as more professionally competent when they closely follow technological developments related to their fields, and as a result, they have a higher level of job satisfaction. For future studies, it may be suggested that similar studies in this field should be conducted on an intercultural basis.

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*Corresponding Author:

Nurullah ÇELİK
E-mail Address:
nurullahc@subu.edu.tr

INTRODUCTION

Physical education, which is accepted as an integral part of the education system in modern societies (Alqarani, 2022; Göktaş, 2007), is the process of deliberately changing behavior by participating in physical movements. In this process, physical education teachers undoubtedly play the most important role in students' success (Demir, 2015; Ünlü & Aydos, 2010). Therefore, it is necessary to increase the qualifications of physical education teachers, one of the most critical components of the education system (Gupo & Patena, 2022; Zhou, 2024).

The physical education teacher, who works in line with the contemporary education and training approach, should not only be a person who realizes the teaching process related to his/her course but also should have many qualifications (Arı & Mat, 2021; Ünlü & Aydos, 2010). It is assumed that teachers gain the expected qualifications in terms of general culture, field knowledge, and professional knowledge in the physical education teacher training program as in teacher training programs (Bulca et al., 2012). Providing these qualifications effectively affects teachers' job satisfaction (Klassen & Chiu, 2010).

Job satisfaction is a person's overall evaluation of his or her job as favorable or unfavorable (Judge et al., 2020). Locke et al. (1983) defined job satisfaction as "a pleasant or positive feeling that arises as a result of a person's evaluation of work or work experience." Job satisfaction is an important factor for the continuity of teachers' professional careers. In this context, controlling the factors that cause job dissatisfaction and increasing job quality is important (Keser, 2005).

From a theoretical aspect, two prominent theories that underscore the significance of job satisfaction are Maslow's hierarchy of needs and Herzberg's dual-factor theory. Maslow's theory refers to the hierarchical structure of needs and suggests that after a lower need is fulfilled, the need in the upper rung emerges (Sun, 2002).

According to the theory, the lowest-ranked need is the fulfillment of physiological needs. Subsequently, the hierarchy includes needs for security, belonging, acceptance, love, and self-actualization. (Franc et al., 2011). When Maslow's theory is applied to the work environment, "payments for physiological needs, social security for the need for security, working in harmony with colleagues for the need for belonging and love, having a title for the need for prestige and advancement in the organization for self-actualization can be given as examples (Cherrington, 1991).

Herzberg stated that Maslow's views were the basis for explaining the motivation factors related to job satisfaction. However, he tried to explain job satisfaction with the motivation-hygiene theory by suggesting that a different explanation was necessary due to employees' individual differences (Hampton, 1972). Intrinsic factors make the employee happy in the work environment and connect them to the work environment. These motivators include success, approval, work, responsibility, progress, and development. Extrinsic factors are defined as hygiene factors. These are factors related to the work environment that reduces the level of job satisfaction (Smerek & Peterson, 2007).

In addition, many factors have an impact on teachers' job satisfaction. One of these factors is a good knowledge of technology (Teo, 2008). Good technology knowledge is an advantage for teachers as it helps them improve their knowledge in their fields. Teachers' proficient utilization of information and communication technologies in educational settings holds significant significance for their development and the advancement of their profession (Ulucan & Karabulut, 2012). Furthermore, educators' incorporation of contemporary technologies enables them to enhance their professional growth and elevate their fulfillment within their field (Özişli & Bağcı, 2022).

Teachers who regularly incorporate technology are more effective in designing instructional materials, preparing targeted content, and using technology proficiently. They also perceive themselves as more professionally competent to teachers who use technology less frequently (Özgür & Gül, 2022).

At this point, efficacy is a personal belief about how well individuals can perform the necessary actions to cope with possible situations, which first emerged in Albert Bandura's social learning theory (Bandura, 1982). A strong sense of efficacy increases a person's achievements and personal well-being in many ways, and people who are confident in their abilities approach complex tasks not as a threat to be avoided but as a challenge to be overcome. Such a strong perspective encourages intrinsic interest and deep immersion in activity (Bandura, 1995).

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Considering the learning-teaching process, one of the factors that directly affect the quality of education is teacher efficacy (Konokman & Yelken, 2013). The professional

competence of teachers refers to the knowledge, skills, attitudes, values, and behaviors expected from teachers (Şişman, 2009). The fact that teachers are the primary implementers of learning and training activities shows the importance of teacher efficacy in order to achieve the goals set in the field of education (Özgül et al., 2022).

In parallel with Bandura's social learning theory, Maslow's hierarchy of needs theory, and Herzberg's Motivation-Hygiene Theory, teachers who feel professionally competent as a result of following technological developments related to their profession feel confidence, success, and enjoyment. This situation results in job satisfaction (Kalkan, 2020; Tohan et al., 2022).

Kopcha and Alger (2010) found that technology plays a crucial role in positively influencing the self-efficacy of novice teachers. Nurgaliyeva et al. (2023) reported significant correlations between educators' technological proficiency and job satisfaction. Özişli and Bağcı (2022) found a moderate and favorable outcome when examining the correlation between educators' information and communication technology competencies and job satisfaction. Consequently, it can be inferred that enhanced personal information and communication technology skills among educators correspond with increased levels of job satisfaction.

Kalkan (2020) stated that job satisfaction increased as the level of professional competence of secondary education teachers increased, and Tohan et al. (2022) stated that pedagogical efficacy emerged. As the level of pedagogical efficacy increases, the level of job satisfaction of teachers also increases. Klassen and Chiu (2010) found that teachers with high professional expertise have high job satisfaction. Caprara, Barbaranelli, Borgogni, and Steca (2003) found a significant relationship between self-efficacy and job satisfaction.

Studies indicate that integrating technology into the classroom enhances learning outcomes and positively impacts teacher job satisfaction and efficacy (Lee & Lim, 2020). The literature encompasses research investigating physical education instructors' job satisfaction levels and professional competence. Similarly, studies have revealed the influence of technology utilization on job satisfaction. However, the current study deals with the effect of the frequency of following technological developments and innovations related to physical education (such as new materials and new methodological approaches) and professional competence on job satisfaction. This kind of research was not found in the related literature. It is thought that it is essential that the increasing use of technology is realized in line with academic purposes (which will contribute to the development of the field). In this context, the hypotheses of the research are given below:

H1. There is a positive relationship between the frequency of following technological developments and job satisfaction.

H2. Following technological developments and professional competence frequently has a positive effect on the job satisfaction levels of physical education teachers.

In line with the hypothesis mentioned above, the study's purpose was to determine the predictive effect of technology follow-up and professional competence on the job satisfaction levels of physical education teachers.

METHODS

Participant

The research group consisted of 217 physical education teachers aged between 22 and 60 ($X_{age} = 40.92 \pm 7.63$). The convenience sampling method was used in the study. In this sampling type, the researcher determines the sample by choosing among the most accessible participants (Büyüköztürk, 2016). The research group was selected among physical education teachers actively working in public and private schools at primary and secondary education level in Sakarya province.

Procedure

This study is a descriptive study examining the predictive effect of technology follow-up and professional competence on the job satisfaction of physical education teachers. It is also a correlational study exploring the correlation between variables (Büyüköztürk, 2016). The second and third researchers contacted the participants face to face and had the scales filled out. This study was found ethically appropriate with the decision of Sakarya University of Applied Sciences Ethics Committee. Additionally, the study was conducted within the framework of the principles of the Declaration of Helsinki.

Data Collection Tools

The researchers explained to the physical education teachers how to fill in the scales used in the study. The process of applying the scales in the study took approximately 5 minutes.

Personal Information Form

In the study, the age, gender, and school types of the participants (teachers) were collected via the personal information form. Besides, the independent variable of the study, which is mentioned as "technology follow-up" in the study, was used in this form to reveal

how often the physical education teachers follow the technological developments related to their fields. In the form, physical education teachers were asked to answer the question, "How often do you follow the technological developments related to your field?" (Never, rarely, once a week, 1-3 times a week, every day). The technological developments include "new technological teaching methods including distance education, new materials used in physical education, new educational approaches.

Teachers Self-Efficacy Scale

In the study, "Teachers Self-Efficacy Scale was used in order to determine the perceptions of professional competence levels of physical education teachers. The scale was developed by Schwarzer et al. (1999) and adapted into Turkish by Gülebağlan (2003). The Turkish form of the scale consists of 9 items and one dimension. It is a 4-point Likert-type scale and its rating ranges from "1-Not true at all" to "4-Totally true". The highest score that can be obtained from the scale is 36, and the lowest score is 9. There are no reverse-scored items in the scale. High scores obtained from the scale indicate that the level of perception of teaching professional competence is high. The internal consistency coefficient of the scale is .76. In this study, Cronbach's alpha reliability coefficient for this scale is 89.

Job Satisfaction Scale

To assess the job satisfaction levels of the physical education teachers in the study, the short version of the Job Satisfaction Scale, which was developed by Judge et al. (1998) was used. The scale was adapted into Turkish by Keser and Öngen Bilir (2019). The scale is a 5-point Likert-type scale. High scores indicate high job satisfaction. The Cronbach Alpha value of the scale is, 72. In the current study, this value was determined as 82.

Data Analysis

Hierarchical regression analysis was done to determine the variables predicting the job satisfaction levels of physical education teachers. The power of the sample to represent the universe was calculated with the G-Power 3.1 program. Power analysis has not been found in studies similar to the current study in the relevant literature. Therefore, in the study, the moderate-level value of 0.15, one of the effect sizes recommended by Cohen (1988), was considered for the regression analysis. For power analysis, R^2 effect size = 0.15, α error = 0.05. According to the results, the minimum sample size with power ($1-\beta = 0.95$) was calculated as $n = 119$. A sample above this number was reached (217) in the study considering situations

such as missing data and incorrect filling. Accordingly, in the first step, gender was included in the model as a control variable. In the second step, the frequency of following technological developments related to their fields, and in the third step professional competence was included in the model. In the study, a question with four answers was formed about the frequency of physical education teachers following technological developments. This question, which was a categorical variable, was transformed into a continuous variable in SPSS as a Dummy variable before regression analysis. In regression analysis, dependent and independent variables must be continuous variables. However, the effect of some discontinuous independent variables on the dependent variable needs to be examined. In order to do this, a new artificial variable called as a dummy variable was created, which was produced as one minus the number of levels by excluding one of the levels of the classified variable in the analysis (Çelen, 2018). In the regression analysis, normality and multicollinearity of the data were examined (Tabachnick & Fidell, 2007). In this direction, it was observed whether there were outliers in the data, and the skewness and kurtosis values in all expressions were in the range of $-2 < \dots < +2$ (George & Mallery, 2010).

RESULTS

The findings of the research have presented below. According to Table 1, the study consists of 65 female participants aged between 22 and 52 (40.92 ± 7.63) and 152 male participants aged between 23 and 60 (41.85 ± 7.96). The age mean average of all participants was 40.92.

Table 1
Descriptive Statistics of Participants' Age Variables

Participants	n	Age			
		Min.	Max.	X̄	Std. Dev.
Female	65	22	52	38.74	6.36
Male	152	23	60	41.85	7.96
Total	217	22	60	40.92	7.63

According to Table 2, it was found that the participants' professional competence scores were between 11 and 25 (mean = 20.16 ± 3.86), and their job satisfaction scores were between 9 and 36 (mean = 30.11 ± 4.90).

Table 2
Descriptive Statistics Related to Professional Competence and Job Satisfaction Scores

Variables	n	Min.	Max.	X	Std. Dev.
Professional Competence	217	11	25	20.16	3.86
Job Satisfaction	217	9	36	30.11	4.90

According to the Table 3, a positive significant relationship was found between frequency of technology follow-up and professional competence ($p < 0.05$, $r = .206$), and job satisfaction ($p < 0.05$, $r = .230$).

Table 3
Results of Correlation Analysis Between Frequency of Technology Follow-Up, Professional Competence, and Job Satisfaction

Variables		Job Satisfaction	Professional Competence
Frequency of technology follow-up	r	.230**	.206**
	p	.001	.002
	n	217	217

** $p < .01$

In the first step of the hierarchical regression analysis, it was determined that gender, which was included as a control variable in the analysis, did not have a significant contribution in this model ($p > 0.05$). Frequency of technology follow-up, which was included in the analysis in the second step, predicted job satisfaction significantly, and its contribution to the model was 5.1%. There is a significant positive relationship between the frequency of following technological developments and job satisfaction ($\beta = .25$, $p < 0.05$). Included in the analysis in the third step, the contribution of professional competence to job satisfaction is significant and explains 16.3% of job satisfaction. There is a significant positive relationship between professional competence and job satisfaction ($\beta = 0.41$, $p < 0.05$).

Table 4
Regression Results Regarding Frequency of Technology Follow-Up and Professional Competence Predicting Job Satisfaction

Model 1	β	t	p
Gender	.073	-1.066	.288
$R = 0.073$, Adjusted $R^2 = 0.001$, $F = 1.136$, $p > 0.01$			
Model 2	β	t	p
Gender	-.084	-1.261	.209
Frequency of technology follow-up	.234	3.524	.001*
$R = 0.245$, Adjusted $R^2 = 0.051$, $F = 6.807$, $p < 0.01$			
Model 3	β	t	p
Gender	-.065	-1.078	.282
Frequency of technology follow-up	.147	2.386	.018*
Professional competence	.415	6.727	.001*
$R = 0.474$, Adjusted $R^2 = 0.214$, $F = 20.559$, $p < 0.01$			

DISCUSSION

The findings of the study aiming to reveal the predictive effect of technology follow-up and professional competence on job satisfaction levels of physical education teachers have been discussed below. According to the findings of the study, the increase in physical education teachers' level of following technological developments related to their field predicts their job satisfaction in a positive and significant way.

In parallel with the fourth stage of Maslow's hierarchy of needs theory, the teachers who feel professionally competent as a result of following the technological developments related to their profession were found to feel more satisfaction in their job (Kalkan, 2020; Tohan et al., 2022). It is possible to say that they exhibit behaviors such as taking responsibility and not avoiding responsibility (Cherrington, 1991). As a matter of fact, it is not possible to say that all teachers follow technological developments in the same way. At this point, it can be said that teachers who need to follow technology have more technological tendencies. It has been concluded that with increasing competence, the job satisfaction of teachers who meet this need also increases.

Similarly, in Herzberg's motivation-hygiene theory, motivational tendencies (success, approval, work itself, responsibility, and progress) of teachers who love their job, have no expectation of reward, and attach importance to individual development are dominant. In other words, it was revealed that the job satisfaction levels of teachers whose intrinsic motivation increased also increased (Smerek & Peterson, 2007).

The current study indicated that job satisfaction levels of physical education teachers who actively engage with technological developments in their professional domains also experienced an increase. In other words, they feel more job satisfaction for keeping up with the latest technological advances in their working field. Similarly, in the study conducted by Ak et al. (2016), a teacher said, "The most valuable item in my teaching profession is to follow the developments related to my field. In my opinion, not only the teachers in our branch but all teachers should closely follow all kinds of studies and changes in their branches or fields. In this way, all teachers can update their knowledge and perform their profession better. The frequency of teachers' following the technology related to their own branch is directly proportional to the timeliness of their lessons because the more frequently teachers follow the technology, the earlier they can access up-to-date information about their field, and they can use this situation in their lessons". As a result, the teacher will positively affect the level of

professional competence. In their study, Güneş and Buluç (2017) analyzed the prediction of professional competence level of technology follow-up. Supporting the findings of the current study, they concluded that there is a positive, moderate, and significant relationship between technology follow-up and professional competence belief.

In the study, teachers' perceived professional competence positively predicted their levels of job satisfaction. Namely, the greater the teachers' perception of professional competence, the higher their perceived job satisfaction. "Similarly, Aydın et al. (2022) concluded that teachers' professional competence significantly predicted the level of job satisfaction in their study to determine the extent to which teachers' professional competence predicted their job satisfaction. In a study conducted by Altinkurt and Yılmaz (2014), it was concluded that as the participants' positive views about professional competence increased, their job satisfaction levels also increased. In the studies of Teltik (2009) and Baltacı (2017), it was determined that there was a positive and significant relationship between job satisfaction level and professional competence level. In other words, it was determined that physical education teachers with high levels of job satisfaction also have high levels of professional competence perception. According to the study conducted by Buluç and Demir (2015), it was reported that there was a positive and significant relationship between teacher professional competence and job satisfaction levels, and teacher professional competence level was a significant predictor of job satisfaction level.

Ünal (2015) determined that as the professional competence levels of secondary school teachers' increase, their job satisfaction levels also increase. Kalkan (2020) revealed that there is a moderate and positive relationship between teachers' professional competence and job satisfaction. Tohan et al. (2022) also revealed that pedagogical efficacy is directly proportional to job satisfaction; that is, if the level of pedagogical efficacy increases, the job satisfaction levels of teachers will also increase. Gamsız (2013) revealed that the increase in teachers' self-efficacy and professional competence beliefs positively affected their job satisfaction. Klassen and Chiu (2010) found that among the subjects of instructional technologies and classroom management, teachers with higher levels of professional competence also had higher levels of job satisfaction. Caprara et al. (2003) found a significant relationship between professional competence and job satisfaction levels in a study involving 2688 teachers in 103 secondary schools in Italy. As the professional competence levels of the classroom teachers participating in the study increased, their job satisfaction levels also increased.

CONCLUSION

In this study, the predictive effect of technology follow-up and professional competence on job satisfaction levels of physical education teachers was investigated. It can be concluded that the perception of professional competence alone positively predicted the job satisfaction levels of teachers, and together with the frequency of following technological developments, it predicted job satisfaction levels at a higher rate. As a result, it has been observed that teachers perceive themselves as more professionally competent when they closely follow technological developments related to their fields, and as a result, thus they have a higher level of job satisfaction.

PRACTICAL IMPLICATIONS

In accordance with the obtained results in this study, some suggestions for practitioners, researchers, and physical educators are presented. It may be suggested that similar studies in this field should be conducted on an intercultural basis. Also, the researchers may examine the frequency of technology follow up of physical education teachers with different variables. In-service training for physical education teachers can be organized, especially for artificial intelligence applications that have become popular in recent years. Physical education teachers can be encouraged to participate in large-budgeted foreign projects to ensure that they have the latest technological software and hardware used in the field of physical education. In particular, training on technological literacy can be provided by both national education and school administrators, thus making it more attractive for physical education teachers to follow technological developments in the field. In addition, the number of cross-cultural educational mobilizations in schools can be increased, and on-site observation of technological applications used in physical education abroad can be encouraged. With all these suggestions, physical education teachers' job satisfaction levels can be increased.

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Authors' contribution

The first author's contribution to the study is on the study design and methodology. The second author's contribution to study is on the data collection and literature review. The

third author's contribution to study is on the data collection, discussion and references sections.

Declaration of conflict interest

All authors state that the manuscript submitted is unpublished and original; that another person's ideas, processes, results, or words are appropriately credited and that no fabrication or falsifications have been made. The paper has not been published previously or has been taken for consideration for publication elsewhere.

Ethics Statement

This research was found ethically appropriate with the decision of Sakarya University of Applied Sciences Ethics Committee dated 07.07.2023 and numbered E.89321.

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