



Open Access

QLANTIC
 JOURNAL OF
 SOCIAL SCIENCES
 AND HUMANITIES

Micro Credentialing and Digital Badges for Teachers: Professional Skills Development of Secondary School Teachers

Nasrullah Khan¹ Saqib Shahzad² Zahid Ullah³ Sumera Imran⁴ Nosheen Saba⁵

Abstract: *This study examined the influence of micro-credentials and digital badges on teachers' professional skills development at the secondary school level in the Mardan district. Teachers are change agents in shaping student's cognitive, affective and psychomotor domains, and hence, this research aims to enhance teacher professionalism. The objective of the study was to revolutionize teacher perceptions related to Micro-credentials and Digital Badges and their influence on teachers' professional skills. The finding of the study provides critical insights into micro-credentials and digital badges, intending to elevate secondary school teachers' proficiency in the teaching-learning process. This study recommends focusing on collaborative learning, digital transformation in the teaching-learning process, sustained professional development, and empowering teachers with advanced teaching practices.*

Key Words: Micro Credentialing, Digital Badges, Professional Skills, Secondary School Teachers, Education

Introduction

Professional development for teachers is becoming more evident in the field of education. There has been a greater increase in the practice of micro-credentials (MC) and digital badges (DB) in educational institutions (Lemoine & Richardson, 2015). In the current educational landscape, traditional degrees and certifications are no longer the only means of demonstrating expertise in a particular field. MC and DB have emerged as alternative forms of recognition that are increasingly being used to validate a wide range of skills and competencies (Van Horn, Krepcio, & Heidkamp, 2015). These digital forms of recognition are often used to supplement traditional degrees and provide learners with a more comprehensive and flexible approach to learning. MCs are typically shorter, more focused courses or programs that allow individuals to acquire specific skills and knowledge related to their field of interest (Chakroun & Keevy, 2018). At the same time, DB is a visual representation of achievements or competencies attained by individuals through various learning exposures (Ostashewski & Reid, 2015). These DB can be exhibited on social media networks, online resumes, and other digital platforms to showcase the individual's achievements and professional skills development. The rise of MC and DB is driven by several factors, including the need for lifelong learning in a rapidly changing job market, esp. a competitive environment, the desire for more personalized learning experiences, and the increasing availability of online learning opportunities. Moreover, MC and DB offer several benefits to teachers and professionals alike (Ghasia, Machumu, Smet, 2019). They equip learners with the freedom to acquire new artistry and understanding in a more adjustable and approachable manner, often at a lower cost than traditional degrees (Brown, Mhichil, Beirne, & Mac Lochlainn, 2021). They also allow individuals to showcase their skills and competencies to potential employers, making them more competitive in the job market (Berger, O., Adler-Abramovich, L., Levy-Sakin, M., Grunwald, 2015).

¹ Secondary School Teacher, Elementary & Secondary Education Department Khyber Pakhtunkhwa Khyber Pakhtunkhwa, Pakistan.

² Associate Professor, Department of Education, Abdul Wali Khan University Mardan, Khyber Pakhtunkhwa, Pakistan.

³ Secondary School Teacher, Elementary & Secondary Education Department Khyber Pakhtunkhwa, Khyber Pakhtunkhwa, Pakistan.

⁴ Assistant Professor, Department of Education, Women Sub Campus, University of Malakand, Lower Dir, Khyber Pakhtunkhwa, Pakistan.

⁵ Assistant District Education Officer Peshawar, Elementary and Secondary Education Department, Khyber Pakhtunkhwa, Pakistan.

▪ **Corresponding Author:** Zahid Ullah (zahidullah0333@gmail.com)

▪ **To Cite:** Khan, N., Shahzad, S., Ullah, Z., Imran, S., & Saba, N. (2024). Micro Credentialing and Digital Badges for Teachers: Professional Skills Development of Secondary School Teachers. *Qlantic Journal of Social Sciences and Humanities*, 5(1), 391-398. <https://doi.org/10.55737/qjssh.707191362>



In today's competitive world, where technological advancements are transforming the educational landscape and demanding new skills from employees, MC and DB are becoming increasingly important (McGreal, Mackintosh, Cox, Olcott Jr, [2022](#)). Individuals need to be abreast with the ongoing trends and technologies in their field of operation and verify their expertise to prospective employers. By its very nature, the investigation of the position of MC and DB in teacher and learner achievement at secondary school level and teacher education level is a glowing topic of research that has the potential to inform the future of education and workforce development (Newby, T. J & Cheng, Z. J. E. T. R. [2020](#)).

In Pakistan, the job market is highly competitive, especially teaching jobs, with a growing number of young people seeking employment opportunities (Tunio, Shah, Qureshi, Tunio, & Shaikh, [2022](#)). However, there is a significant mismatch between the skills and qualifications possessed by job seekers and the requirements of employers. This mismatch has resulted in high rates of unemployment and underemployment, particularly among young people. To address this issue, the government of Pakistan has launched several initiatives aimed at promoting skill development and lifelong learning, including the introduction of vocational training programs and the establishment of technical and vocational education and training (TVET) institutions (Pirzada, Muhammad & Mahmood, [2022](#)). However, there is still a significant gap between the demand for skilled workers and the availability of qualified candidates.

Significance of the Study

The usefulness of this study lies in its potential to establish valuable apprehension about the role of MC and DB in enhancing teachers' professional development at the secondary school level in Pakistan. By investigating the awareness, perception, and adoption of these credentials among school teachers, the study can identify the factors that influence their uptake and the impact they have on their professional skills development. The findings of this study can have several implications for policymakers, educators, and teachers in Pakistan.

The study can help to actualize the development of policies and practices that support the adoption and use of MC and DB in teacher education. By identifying the factors that influence their uptake, policymakers and educators can design programs and initiatives that promote their use and enhance their effectiveness. Secondly, the study can have practical implications for secondary school teachers in Mardan, particularly those who may be seeking alternative pathways to traditional degree programs. The study will contribute to the broader international discussion around the use of MC and DB in teacher education. By examining their adoption and impact in the Pakistani context, the study can provide insights into the potential of these credentials to enhance teachers learning and success and inform the development of policies and practices that support their use globally.

Objective of the Study

1. To investigate the awareness and perception of secondary school teachers towards MC and DB.

Research Design

The study utilizes a quantitative research approach, as the objectives are focused on collecting numerical data to measure the prevalence and impact of MC and DB on teachers' professional skills development. The research design was cross-sectional, as the study assembles data at a uniform point in time. Data were collected through a survey administered to school teachers in district Mardan. The study uses the convenience sampling technique, a sub-type of nonrandom sampling, to select participants. Teachers from various schools across the district were invited to participate in the study through hard copies of the questionnaire and online channels such as email and social media. To ensure a representative sample, efforts were made to reach out to teachers of different subjects and cadres at the secondary school level. The data were mounted using a self-executed online survey as well as through a hard copy of the questionnaire. This survey comprised closed-ended questions intended to measure the prevalence and impact of MC and DB on teachers' professional skills achievement. The data were scrutinized using quantitative statistical analysis practices. Descriptive statistics were applied to review the data collected against objective means, as well as standard deviations. Inferential statistics, such as correlation analyses and t-tests, were exercised to examine hypotheses and ascertain whether there were significant variances between groups.

Data Analysis and Interpretation

In the subsequent phase, following the validation and confirmation of the tool's reliability, the researcher proceeded to distribute it among 207 school teachers for the ultimate data collection. Convenience sampling, a non-probability technique, was operational zed for this purpose, facilitating data collection throughout the entire progression. The researcher assessed the frequency of participants based on their academic qualifications, professional background, years of experience, number of professional qualifications attained, and the count of earned MC and DB. A comprehensive set of collective descriptive statistics was compiled, and separate descriptive statistics tables of the gathered data were generated and interpreted. Within these descriptive statistics, the data on mean and standard deviation was calculated and documented. An independent sample t-test was carried out to make certain the variance in contribution was characterized by gender. The researcher has crafted tables encompassing the entirety of the compiled data, consisting of frequency tables, descriptive statistics tables, and a t-test table. The data from these tables is subsequently interpreted.

Table 1

Frequency of academic qualification

Academic Qualification	Frequency	Per cent
Bachelors	11	5.3
BS/Masters	113	54.6
MS/M.Phil	74	35.7
PhD	9	4.3
Total	207	100.0

Table 1 illustrates the distribution of academic qualifications among the total 207 respondents surveyed. Among them, a smaller proportion of 11 (5.3%) teachers hold a Bachelor's degree. The majority, comprising 113 (54.6%) teachers, possess BS/Masters degrees, while 74 (35.7%) teachers hold MS/MPhil degrees. Additionally, a small fraction of 9 (4.3%) teachers have a PhD degree within the surveyed sample. This data highlights that the majority of participating teachers hold qualifications in BS/Masters and MS/MPhil degrees.

Table 2

Frequency of professional qualification

Professional Qualification	Frequency	Per cent
B.Ed.	96	46.4
M.Ed.	97	46.9
B.Ed. Honours	4	2.0
None	3	1.4
Induction	2	.96
Other	5	2.4
Total	207	100.0

Table 2 presents the distribution of professional qualifications among the 207 surveyed teachers. The data reveals that 96 (46.4%) teachers hold a B.Ed. Degrees, while a similar percentage, 97 (46.9%), possess M.Ed. degrees. Furthermore, a smaller portion includes 4 (2%) teachers with B.Ed. Honours, 3 (1.4%) with no professional qualifications, 2 (.96%) with induction certificates, and 5 (2.4%) with other professional qualifications. These findings indicate that a substantial majority of respondents have qualifications in B.Ed. and M.Ed. degrees, while a smaller fraction holds other professional qualifications.

Table 3

Frequency of experience in years

Experience in Years	Frequency	Per cent
Less than 2 Years	23	11.1
2-5 Years	50	24.2
5-10 Years	81	39.1
More than 10 Years	53	25.6
Total	207	100.0



Table 3 depicts the years of teaching experience among the surveyed teachers. The data reveals that 23 (11.1%) teachers have less than 2 years of experience, while 50 (24.2%) have been teaching for 2 to 5 years. Furthermore, 81 (39.1%) teachers have acquired 5 to 10 years of teaching experience, and 53 (25.6%) teachers acknowledged teaching experience of 10 plus years, within the total count of 207 respondents in the survey. These results advocate that a sizeable number of teachers retain over 5 years of teaching experience.

Table 4

The frequency of the number of professional programs that participated

A number of Professional Programs Participated	Frequency	Per cent
None	38	18.4
Less than 2	60	29.0
2-5	60	29.0
More than 5	47	22.7
Total	205	99.0
Missing system	2	1.0
Total	207	100.0

Table 4 outlines the participation of teachers in professional programs over the course of their careers. The data indicates that 205 (99.0%) teachers have participated in professional programs, while 2 (1.0%) teachers were unaccounted for in the system. Among the respondents, 38 (18.4%) teachers did not engage in any professional programs. Additionally, 60 (29.0%) teachers took part in less than 2 programs, another 60 (29.0%) participated in 2 to 5 programs, and 47 (22.7%) teachers engaged in more than 5 programs. These findings underscore that a significant majority of participants have actively participated in various professional programs throughout their careers.

Table 5

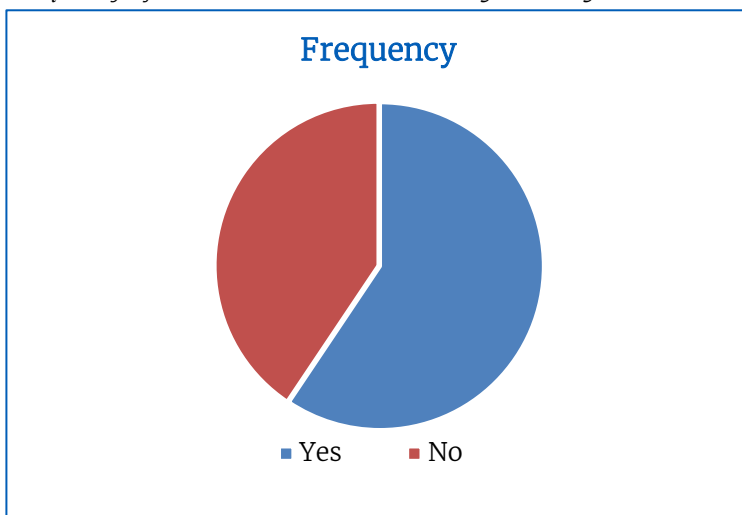
Frequency of earned micro-credential/digital badge in the academic/professional career

Micro-credential/Digital Badge	Frequency	Per cent
Yes	123	59.4
No	84	40.6
Total	207	100.0

Table 5 illustrates the acquisition of MC and DB among the study sample. Among the 207 teachers, 123 (59.4%) have earned these credentials, while 84 (40.6%) have not acquired them during their academic and professional careers. This data signifies that a larger portion of the sample has obtained these knowledge packs, while a smaller subset within the study has yet to gain these credentials.

Figure 1

Frequency of earned micro-credential/digital badge in the academic/professional career



The pie chart above indicates the distribution of MC and DB among the participants, categorizing them into yes or no portions. The blue segment represents participants who have earned these credentials, while the orange portion represents those who have not obtained any credentials. From this representation, it can be concluded that the majority of teachers have acquired these credentials during their academic and professional careers.

Descriptive Statistics of the Variables

Table 6

Awareness descriptive statistics

Item	N	Minimum	Maximum	Mean	Std. Deviation
AWAR	207	1.00	5.00	3.5193	1.26553

Table 6 provides descriptive statistics regarding the awareness of MC and DB among 207 survey participants. The data particulars range over from a minimum score of 1.00 to a maximum of 5.00, with an average (mean) score of 3.5193. The standard deviation, recorded at 1.26553, infers inconsistency in awareness levels among teachers. The mean value indicates a moderate level of awareness regarding MC, while the standard deviation value indicates a slight variation in awareness levels among the teachers surveyed.

Table 7

Frequency of awareness of MC

Source	Frequency	Per cent
NA	26	12.6
TC	66	31.9
TPDP	48	23.2
TOLP	59	28.5
Others	8	3.9
Total	207	100.0

Table 7 allocates the roots of awareness regarding MC among the surveyed participants. Among the total 207 teachers surveyed, 26 (12.6%) teachers indicated they were not aware of MC. However, the majority gained awareness through various sources: 66 (31.9%) through colleagues, 48 (23.2%) from professional development programs, 59 (28.5%) via online platforms and 8 (3.9%) through other means. These findings suggest that a significant portion of the surveyed teachers possess awareness about MC, while a notably smaller fraction remains unaware of them.

Table 8

Frequency of awareness of DB

Source	Frequency	Per cent
NA	39	18.8
TC	61	29.5
TPDP	38	18.4
TOLP	63	30.4
Others	6	2.9
Total	207	100.0

Table 8 elaborates on the sources from which the survey respondents gained awareness about DB. Among the 207 respondents, 39 (18.8%) teachers indicated a lack of awareness about DB. Conversely, a considerable portion gained awareness through specific channels: 61 (29.5%) through colleagues, 38 (18.4%) via professional development programs, and 63 (30.4%) through online platforms. Additionally, a smaller number, 6 (2.9%), became aware through other sources. These findings suggest that colleagues, professional development programs, and online platforms stand out as the primary sources through which teachers acquire awareness about DB.

**Table 9***Descriptive statistics about perception*

Item	N	Minimum	Maximum	Mean	Std. Deviation
PER	207	1.00	5.00	3.7739	.99976

Table 9 presents the descriptive statistics on teachers' perceptions of MC and DB. Based on a sample of 207 participants, the data reveals a range of perception scores with a minimum notch of 1.00, a maximum of 5.00, and an average (mean) perception score of 3.7739. The standard deviation of .99976 suggests a moderate level of variability in perception scores among the teachers. The findings indicate that, on average, teachers have a moderate level of perception about MC and DB, with some variability in individual perception levels. This information provides valuable insights into the distribution and central tendency of perception scores, offering a snapshot of the overall perception landscape among the surveyed teachers.

Findings of the Study

The demographic analysis of the respondents and their frequency analysis have been extracted from the collected data. Similarly, descriptive statistics for the Likert scales of the survey items were performed, which ranged from minimum to maximum (1-5). The result of the gender-wise frequency of the teachers who participated in the survey showed that a total of 207 teachers took part in the survey. It was realized that 120(58.0%) male and 80(38.6%) female teachers attended the survey while 7(3.4%) participants kept close their gender identity. The researcher concluded that the participation ratio of male teachers was greater than that of female teachers. It was also noted that the participants were mostly government sector teachers, with 87.4%. It revealed their interest in this study was quite satisfactory. This further highlighted that 141(68.1%) participants were employed in the rural schools. Moreover, this data shows that the majority of the teachers are qualified in BS/Masters and MS/MPhil degrees with 54.6% and 35.7% respectively. The data also pointed out that a greater portion of the teachers surveyed have B. Ed and M. Ed degrees on their professional side, along with their academic qualifications, with 46.4% and 46.9%, respectively. Likely, the study identified that experienced teachers participated in the survey, with 39.1% having 5-10 years of teaching experience and 25.6% having more than 10 years of teaching experience at the secondary school level. Similarly, in the array of professional development, 29.0 % participated in 1 professional program and 29.0% in 2-5 programs, while 22.7% were part of more than 5 professional development programs. Accordingly, out of 207 participants, 59.4% have earned MC and DB for their professional skills development and core competence, and 40.6% have not earned any credentials.

Awareness and Perception towards MC and DB

The investigation into teachers' awareness of MC and DB unveiled a discernible trend. The analysis indicated a moderate level of awareness among the surveyed teachers concerning micro-credentials, with subsequent variability highlighted by a standard deviation of 1.26553. Similarly, the perception of these educational tools among teachers was characterized by a moderate mean score of 3.7739, indicating a moderately positive viewpoint tempered by individual variability. The standard deviation of .99976 reflected a noticeable level of variability in perception scores. Collectively, these findings suggest a landscape where teachers demonstrate a moderate level of awareness and perception regarding MC and DB, albeit with noticeable individual variations in perception levels. For the data analysis, a t-test was conducted to measure the level of awareness and perception towards MC and DB between two groups of teachers, one of whom earned MC and DB and the other did not. From the data analysis, it has been concluded that there is a significant difference in awareness and perception between the two groups of teachers. Hence, the first null hypothesis is rejected.

Conclusions

1. The sample study showed that most of the teachers are well-qualified academically and professionally.
2. It was concluded that the majority of the study participants have more than 5 years of teaching experience.

3. It was concluded that an adequate number of teachers have participated in professional development programs.
4. The study also noticed that 59.4 % of teachers had earned MC and DB for the improvement of their professional skills.
5. The survey investigated the significant difference in awareness and perception levels between two groups of teachers who have earned MC and DB and those who haven't.

Recommendations

The following recommendations were drawn based on this research study.

1. It was recommended that Integrating MC and DB into professional development programs had a profound impact, offering educators self-directed avenues for growth and adaptability in an ever-evolving educational landscape.
2. The research findings underscored the crucial role of MC and DB in addressing the shifting demands of modern education. They didn't merely cater to the digitally-driven era but equipped teachers with tools to adapt and excel in a dynamically changing educational environment. As a consequence, it was recommended and encouraged that their utilization aligned with the aim of empowering secondary school teachers to meet these evolving demands effectively.
3. Empowerment was a key outcome observed through the incorporation of alternative approaches like MC and DB. These methods held immense potential, enabling teachers to take charge of their growth and direct it toward areas most relevant to their practice. Therefore, recommended that self-directed learning through these avenues paved the way for a more proficient cadre of educators equipped to navigate the complexities of modern education.
4. The research strongly advocated for the sustainable cultivation of proficient educators through the integration of innovative methods. Recommending their incorporation into educational policies and practices ensured a sustained approach to cultivating adaptable, skilled teachers capable of meeting the challenges of contemporary education effectively. This fostered a more resilient and versatile teaching community equipped to navigate the multifaceted demands of the educational sphere.
5. Collaborative efforts among stakeholders, policymakers, and educational institutions played a pivotal role in facilitating the integration of MC and DB. Establishing frameworks that promoted and supported the implementation of these methods ensured a unified approach toward fostering professional development among secondary school teachers. Encouraging collaboration and sharing best practices in utilizing MC and DB enhanced their effectiveness in shaping a more adept teaching community.

References

- Berger, O., Adler-Abramovich, L., Levy-Sakin, M., Grunwald, A., Liebes-Peer, Y., Bachar, M., Buzhansky, L., Mossou, E., Forsyth, V. T., Schwartz, T., Ebenstein, Y., Frolov, F., Shimon, L. J., Patolsky, F., & Gazit, E. (2015). Light-emitting self-assembled peptide nucleic acids exhibit both stacking interactions and Watson-crick base pairing. *Nature Nanotechnology*, 10(4), 353-360. <https://doi.org/10.1038/nnano.2015.27>
- Brown, M., Nic Giolla Mhichíl, M., Beirne, E., & Mac Lochlainn, C. (2021). The global micro-credential landscape: Charting a new credential ecology for lifelong learning. *Journal of Learning for Development*, 8(2), 228-254. <https://doi.org/10.56059/jl4d.v8i2.525>
- Chakroun, B., & Keevy, J. (2018). *Digital credentialing: implications for the recognition of learning across borders*. <https://doi.org/10.54675/sabo8911>
- Ghasia, M., Machumu, H., & Smet, E. D. (2019). Micro-credentials in higher education institutions: An exploratory study of its place in Tanzania. *International Journal of Education and Development Using ICT*, 15(1), 219-230. <https://files.eric.ed.gov/fulltext/EJ1214271.pdf>
- Horn, C. V., Krepcio, K., Heidkamp, M., & Heldrich, J. J. (2015). Improving education and training for older workers. <https://www.aarp.org/pri/topics/work-finances-retirement/employers-workforce/improving-education-training-older-workers.html>



- Lemoine, P. A., & Richardson, M. D. (2015). Micro-credentials, Nano Degrees, and Digital Badges: New Credentials for Global Higher Education. *International Journal of Technology and Educational Marketing*, 5(1), 36–49. <https://doi.org/10.4018/ijtem.2015010104>
- McGreal, R., Mackintosh, W., Cox, G., & Olcott, Jr., D. (2022). Bridging the Gap: Micro-credentials for Development. *The International Review of Research in Open and Distributed Learning*, 23(3), 288–302. <https://doi.org/10.19173/irrodl.v23i3.6696>
- Newby, T. J., & Cheng, Z. (2020). Instructional digital badges: effective learning tools. *Educational Technology Research and Development*, 68, 1053–1067. <https://doi.org/10.1007/s11423-019-09719-7>
- Ostaszewski, N., Reid, D. (2015). A History and Frameworks of Digital Badges in Education. In: Reiners, T., Wood, L. (eds) *Gamification in Education and Business*. Springer, Cham. https://doi.org/10.1007/978-3-319-10208-5_10
- Pirzada, G., & Muhammad, Y. (2022). Assessment Challenges Faced by Technical Vocational Education (TVET) Stakeholders in Pakistan: Stakeholders' Perspectives. *Research Journal of Social Sciences & Economics Review*, 3(4), 17–26. [https://doi.org/10.36902/rjsser-vol3-iss4-2022\(17-26\)](https://doi.org/10.36902/rjsser-vol3-iss4-2022(17-26))
- Tunio, M. N., Shah, S. M. M., Qureshi, M. A., Tunio, A. N., & Shaikh, E. (2022). Career Predilections and Options to Opt Occupation for the Youth in Pakistan. *Advances in Educational Marketing, Administration, and Leadership Book Series*, 156–170. <https://doi.org/10.4018/978-1-7998-8505-4.ch009>

List of Abbreviations

MC	Micro-credentials	DB	Digital Badges
MOOC	Massive Open Online Course	PD	Professional Development
SST	Secondary School Teacher	IT	Information Technology
BS	Bachelor of Science	B.Ed	Bachelor of Education
MEd	Master of Education	MS	Master of Science
MPhil	Master of Philosophy	PhD	Doctor of Philosophy
AWAR	Awareness	NA	Not Aware
TC	Through Colleagues	TOLP	Through Online Platforms
TPDP	Through Professional Development Programs	PER	Perception