Integration of Digital Pedagogy for Teacher Internship Program through E-Training to Realize Smart Society

Ghasa Faraasyatul 'Alam[1](✉), Bambang Budi Wiyono[2], Burhanuddin[1], Muslihati[1]
[1]Department of Educational Management, Faculty of Education,
State University of Malang, Indonesia
[2] Department of Guidance and Counseling, Faculty of Education,
State University of Malang, Indonesia
ghasa.faraasyatul.2201329@students.um.ac.id

Abstract— Technological developments that are increasingly advanced make all kinds of fields continue to make updates, as well as the world of education where the integration of digital pedagogy for educators must be improved, especially for those who take part in the teacher internship program. One of the factors of community intelligence is determined by the professionalism of teachers in providing teaching. The purpose of this study is to analyze the needs of internship teachers through e-training based on the development of integration of digital pedagogy so that a smart society can be realized properly. The research method used quantitative with a total of 150 respondents taken from active students who took part in the teacher internship program at Brawijaya University. Research data obtained from online questionnaires were analyzed using IBM SPSS Statistics 22 software to obtain accurate results. Findings in the study include: a) investigating into the relevance of technology integration is 28%; b) various digital pedagogy technologies with mobile app/computer software is 33%; and c) integration of digital pedagogy with teaching techniques and content which obtains a percentage is 64%.

Keywords—integration of digital pedagogy, teacher internship program, e-training, smart society

1 Introduction

The educational challenges of the 21st century are increasingly diverse with the emergence of highly innovative learning technologies. Smart society must continue to be printed so that an even and synergized life order can continue to run well. The need for smart education in this smart society as a form of contribution to responding to ongoing problems [1]. Digital society has become a reality based on aspects of life with the concept of society 5.0, thus the digitalization dimension will continue in the long term with the application of digital technology at every level of education. An intelligent society is a form of advanced society after an agrarian society, an industrial society, and an information society that implements a digital data processing system as the main carrier so that the governance of a smart society is still exposed to many digital challenges [2]. When talking about a smart society, this cannot be separated from what

© The Author(s) 2023
E. Ediyanto et al. (eds.), *Proceedings of the 2nd International Conference on Educational Management and Technology (ICEMT 2023)*, Advances in Social Science, Education and Humanities Research 801,
https://doi.org/10.2991/978-2-38476-156-2_19

is called smart education where the fundamentals of a quality and superior education lie in the professionalism of teachers in teaching theoretical and practical knowledge adapted to the development of the digital era.

The solution to getting a smart society is to strengthen teacher professionalism in relation to the integration of digital pedagogy through various trainings that are directly adjacent to the use of digital learning technology so that teacher output becomes superior and of high quality. Teacher professionalism is urgently needed to obtain quality education with the practice of increasing teacher professionalism accompanied by training in skills or teaching competencies effectively accompanied by a comprehensive approach in the form of smart education [3]. Teachers who have been professionally trained are one of the fundamental factors of success so that they can have a positive influence on their students when the learning process takes place [4].

Brawijaya University is one of the state universities that is open to the development of digital technology, especially in the teaching and learning process. The university has a teacher internship program that requires students to teach in educational units. Before going directly into the field to educate the public to be smart, the in-ship teachers should be provided with some training related to the integration of digital pedagogy so that the distribution of knowledge can be conveyed interactively. Further analysis related to teacher internship learning needs to be done first to find out what kind of e-training needs to be strengthened. Based on this study, several research questions have been compiled, including teachers' internship purposes in the e-training to realize a smart society, various digital pedagogy technologies through e-training to realize a smart society, and integration of digital pedagogy.

Good implementation of e-training is based on user's perceived ease of use, computer and internet self-efficacy, perceived usability, interaction, technical support, and management support [5]. Studies state that the effect of training on teacher productivity in improving student achievement is considered high [6]. Training needs to be carried out from the beginning to the end of the program, because many aspects need to be well studied such as reflective assistance, approaches to interactive teaching and learning processes, integration of prospective teachers into the education system, and teaching together with the application of digital technology [7].

The transition period in the world of education from the traditional face-to-face teaching model to a more modern teaching and learning model with a digital pedagogical approach so that technological achievements are able to answer the social needs of today's intelligent society [8]. The importance of e-training in the success of students at tertiary institutions who take part in teacher internship programs where they have to teach in educational units, it is necessary to analyze the needs of e-training so that a smart society can be realized without any obstacles. The main objective in this study is related to the integration of digital pedagogy for teacher internship programs through e-training to realize smart society which is carried out before field practice is realized, so that the material presented in e-training is in accordance with the needs and requirements of digital competencies, especially regarding pedagogy in activities learning to teach optimally.

2 Methods

The study used a quantitative method with 150 internship teachers as active students at Brawijaya University as respondents. Data collection was carried out by distributing questionnaires online through the help of the Goggle Form as a whole to the respondents. The data analysis process in quantitative research uses assistance from the IBM SPSS Statistics 22 program, so that the field data obtained can be analyzed properly and accurately. The conceptual framework in this study can be seen in Fig 1.

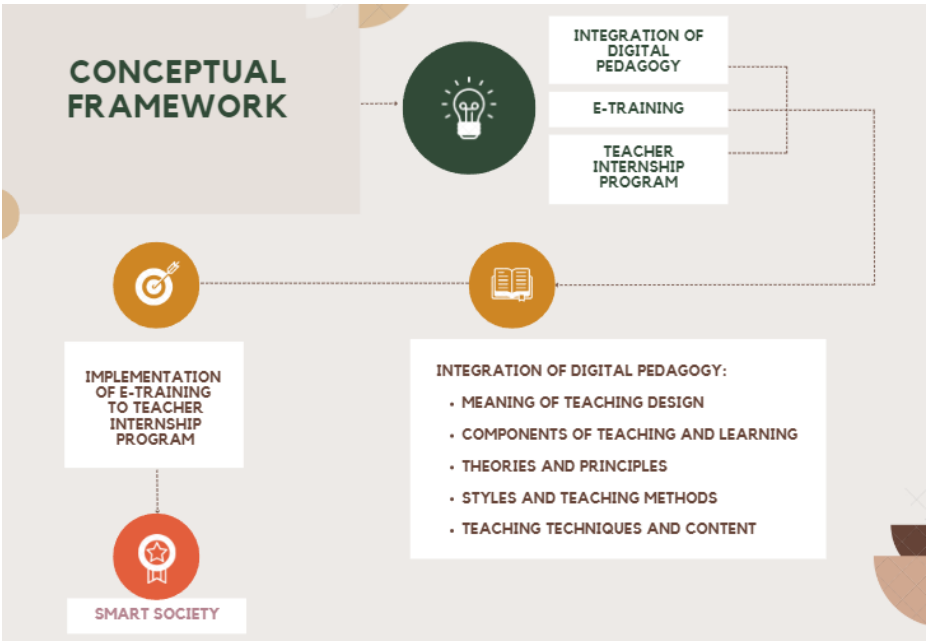


Fig. 1. Conceptual Framework

The conceptual framework in this study explains that the training carried out by students in the teacher internship program is based on the integration of digital pedagogy consisting of meaning of teaching design, components of teaching and learning, theories and principles, styles and teaching methods, teaching techniques and content. After the internship teachers get their digital learning through e-training, it is hoped that they will be able to create what is called a smart society for an equitable global civilization.

3 Result

The findings of this study include three, namely internship teachers' purposes in the e-training to realize a smart society, various digital pedagogy technologies through e-training to realize a smart society, and integration of digital pedagogy. As for the first finding in this study, it can be seen in Fig 2.

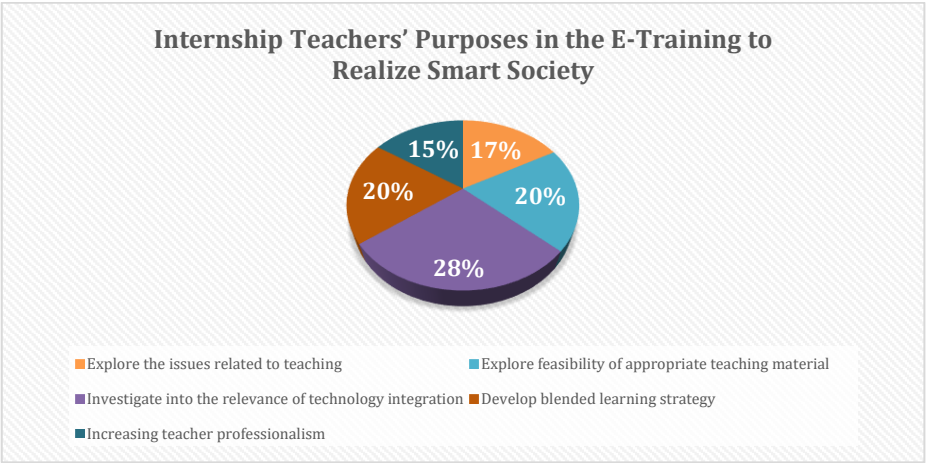


Fig. 2. Internship teachers' purposes in the e-training to realize smart society

Illustration from internship teachers' purposes in the e-training to realize a smart society shows that first highest percentage is investigate into the relevance of technology integration aspect is 28%, followed by the explore feasibility aspect of appropriate teaching material and develop blended learning strategy is 20%, the next sequence lies in the explore the issues related to teaching aspect which is 17%, and finally the lowest lies in the aspect of increasing teacher professionalism which is 15%. The results of these findings can be concluded that internship teachers' purposes in the e-training to realize a smart society is an investigation into the relevance of technology integration. Other findings regarding various digital pedagogy technologies through e-training to realize a smart society can be seen in Fig 3.

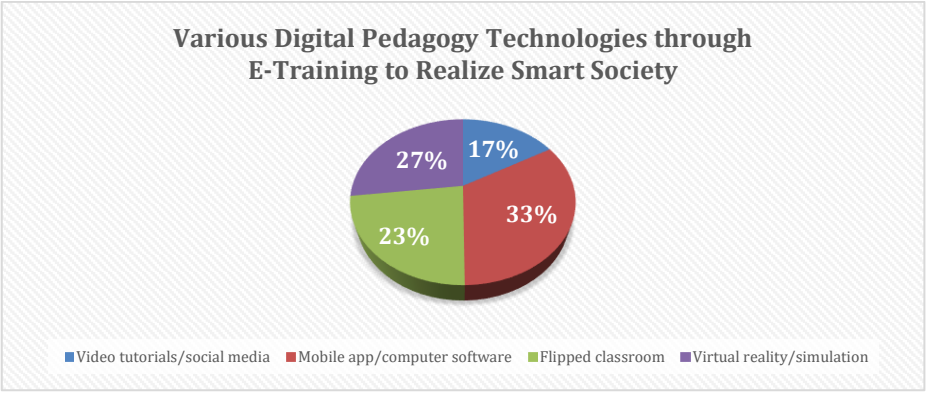


Fig. 3. Various digital pedagogy technologies through e-training to realize smart society

Illustration of the findings from various digital pedagogy technologies through e-training to realize a smart society explains that mobile app/computer software has the highest percentage 33%. The second position lies in virtual reality/simulation with a

percentage of 27%, followed by the third position in flipped classroom with a percentage of 23%, and the last position in video tutorials/social media 13%. KMO and Bartlett's test and anti-images matrices results can be seen in Fig 4.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.794
Bartlett's Test of Sphericity	Approx. Chi-Square	349.691
	df	10
	Sig.	.000

Anti-image Matrices

		Meaning of Teaching Design	Components of Teaching and Learning	Theories and Principles	Style and teaching Methods	Teaching Techniques and Content
Anti-image Covariance	Meaning of Teaching Design	.333	-.205	-.108	-.074	.069
	Components of Teaching and Learning	-.205	.324	-.041	-.034	-.161
	Theories and Principles	-.108	-.041	.514	-.172	-.044
	Style and teaching Methods	-.074	-.034	-.172	.550	-.114
	Teaching Techniques and Content	.069	-.161	-.044	-.114	.707
Anti-image Correlation	Meaning of Teaching Design	.740[a]	-.624	-.262	-.173	.143
	Components of Teaching and Learning	-.624	.744[a]	-.100	-.080	-.336
	Theories and Principles	-.262	-.100	.866[a]	-.324	-.074
	Style and teaching Methods	-.173	-.080	-.324	.869[a]	-.183
	Teaching Techniques and Content	.143	-.336	-.074	-.183	.798[a]

a. Measures of Sampling Adequacy(MSA)

Fig. 4. KMO and bartlett's test and anti-image matrices

Interpretation shows that the value of KMO and Bartlett's test is 0.794 > 0.50 and a significance value of 0.000 < 0.05 so that the analysis of the integration of digital pedagogy is declared feasible for the next test. As for results of anti-image matrices, it can be seen that MSA value is > 0.50, so the requirements have been fulfilled properly. Results of the total variance explained can be seen in Fig 5.

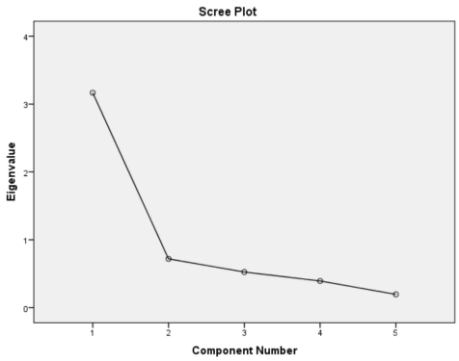
Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.168	63.351	63.351	3.168	63.351	63.351
2	.719	14.376	77.727			
3	.525	10.500	88.227			
4	.393	7.860	96.087			
5	.196	3.913	100.000			

Extraction Method: Principal Component Analysis.

Fig. 5. Total variance explained

Interpretation of total variance explained explains that there is one factor that can explain 63.351% of the variation. For further explanation, please pay attention to the scree plot and component matrix Fig 6.



Component Matrix[a]

	Component
	1
Meaning of Teaching Design	.857
Components of Teaching and Learning	.873
Theories and Principles	.807
Style and teaching Methods	.790
Teaching Techniques and Content	.629

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Fig. 6. Scree plot and component matrix

Interpretation of scree plot shows that the component point values that have an eigenvalue > 1 have one point with a clearly visible factor formation of one. The total eigenvalue for component one is 3.168 while the values for component matrix are all more than 0.50. Another finding which can be seen in Fig 7.

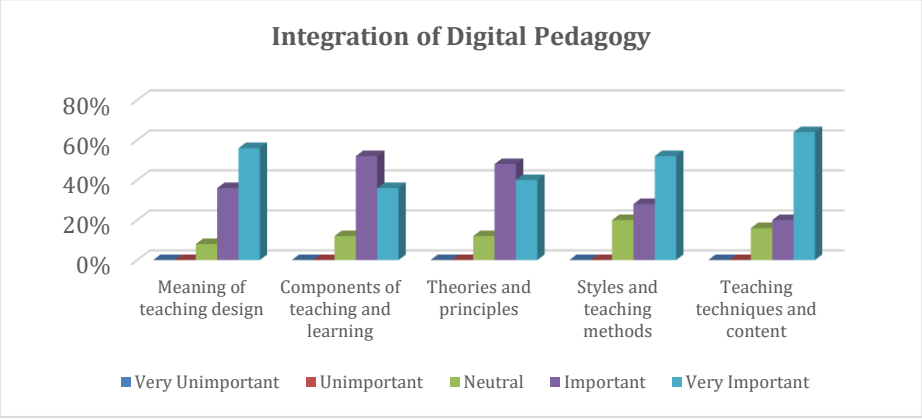


Fig. 7. Integration of digital pedagogy

Graphic illustration from integration of digital pedagogy explains that the highest score in the "very important" category lies in the teaching techniques and content which obtains a percentage of 64%, while the lowest lies in the components of teaching and learning which is 36%. Meaning of teaching design obtain a percentage of 56%, theories and principles is 40%, and aspects of styles and teaching methods is 52%.

4 Discussion

Institutions with a higher education level are currently trying to provide a greater variety of conveniences, flexibility and individuality through the application of a new

digital pedagogy so that it is very useful for the progress of higher education if it is successfully implemented properly [9]. There have been many studies that have carried out evaluations related to the progress of real-world experience or teaching practice in a partner institution in which they use digital pedagogy in training activities to be able to perfect the abilities possessed by students in tertiary institutions [10]. Many suggestions from higher education stakeholders also use innovative teaching strategies based on digital pedagogy through the integration of digital tools that can produce an effective, efficient learning environment and are able to encourage independent learning for students. Digital technology in this era is increasingly popular in the teaching and learning process so that teachers who have digital competence are very important for the success of their integration [11].

Digital pedagogy has come a long way over the last twenty years, but at the same time it has become a topical area related to the integration of digital technology in education so that it can have a considerable impact and provide its own challenges for today's smart society [12]. Studies prove that the approach to working with students in building the integration of digital pedagogy into the entire teaching and learning cycle with the application of digital technology is more effective for improving the performance and quality of the students themselves [13]. This is able to open a brighter future path for equitable global civilization in the development of digital pedagogy which is increasingly innovative and has high flexibility adapted to different pedagogical scenarios depending on how educational institutions manage it all [14].

The knowledge framework as a teacher to be able to integrate various types of technology in accordance with their teaching and learning activities is often combined with knowledge of technological pedagogical content which is very important for effective teaching [15]. Teachers' digital technology pedagogical knowledge can be combined with a participatory attitude to strengthen the implementation of active, content-focused learning so that digital literacy capture becomes more collaborative [16]. Teacher education programs in the digitalization era play an important role in developing a mindset of equality and social justice for teachers, knowledge, and expertise in integrating technology with educational goals that can provide long-term benefits in providing unique learning according to the times [17].

The development of an effective professional teacher makes a real contribution to increasing knowledge and field practice as a teacher and provides learning that is considered to have deep meaning with meaning that is integrated with social life intelligently in the 21st century [18]. Understanding teacher best practices professionally by applying the use of digital technology and digital pedagogy so that they are able to inform the implementation of the 21st century classroom so as to encourage an innovative, learner-centred teaching and learning environment [19]. Recommendations that can also be made in relation to the integration of digital pedagogy are to strengthen the continuous professional development of teachers in stages by creating learning communities or professional training related to the use of technology and digital pedagogy so that they can provide a mixed approach that is considered more effective for teacher learning and delivery instruction in the 21st century [20].

5 Conclusion

The conclusions of this study, among others, are from internship teachers' purposes in the e-training to realize a smart society with the aspect of investigating into the relevance of technology integration is 28%. The next research finding from various digital pedagogy technologies through e-training to realize a smart society explains that mobile app/computer software is 33%. The final finding from integration of digital pedagogy explains that the highest score in the "very important" category is teaching techniques and content which obtains a percentage of 64%.

This shows that internship teachers are very interested in e-training, because they can develop their abilities in teaching and learning activities while still prioritizing training and learning around digital pedagogy which in the current era of modern technology is really needed so that in the future it can create smart society for an equitable global civilization. The implications of this study are related to strengthening e-training for teacher internships in tertiary institutions which will be very beneficial for educational institutions, because they have students who are competent in the field of education both in theory and field practice. All of this makes the existence of higher education institutions increase and the image of tertiary institutions in social society also improves, because there are many output students who excel or have excellence in the field of teacher training professionally.

6 References

[1] M. J. Sá, S. Serpa, and C. M. Ferreira, "Citizen Science in the Promotion of Sustainability: The Importance of Smart Education for Smart Societies," *Sustain.*, vol. 14, no. 15, 2022, doi: 10.3390/su14159356.

[2] X. Chen, X. Tang, and X. Xu, "Digital technology-driven smart society governance mechanism and practice exploration," *Front. Eng. Manag.*, vol. 10, no. 2, 2023, doi: 10.1007/s42524-022-0200-x.

[3] Farihin, Suteja, Muslihudin, Aris, A. A. Haqq, and W. Winarso, "A Skill Application Model to Improve Teacher Competence and Professionalism," *Int. J. Educ. Methodol.*, vol. 8, no. 2, 2022, doi: 10.12973/ijem.8.2.331.

[4] Suyatno, Wantini, D. I. Pambudi, T. Hamami, Y. Rachmawati, and F. Nofiaturrahmah, "The Influence of Meaning in Life and Teacher Leadership on Teacher Professionalism through Structural Equation Model," *Int. J. Instr.*, vol. 15, no. 3, 2022, doi: 10.29333/iji.2022.15331a.

[5] H. M. Al-Shorman, R. O. K. Alshawabkeh, F. M. F. Aldaihani, F. L. Y. Aityassine, A. Mohammad, and S. I. S. Al-Hawary, "Drivers of e-training intention to use in the private universities in Jordan," *Int. J. Data Netw. Sci.*, vol. 5, no. 4, 2021, doi: 10.5267/j.ijdns.2021.x.002.

[6] D. N. Harris and T. R. Sass, "Teacher training, teacher quality and student achievement," *J. Public Econ.*, vol. 95, no. 7–8, 2011, doi: 10.1016/j.jpubeco.2010.11.009.

[7] N. Assadi, T. Murad, and M. Khalil, "Training teachers' perspectives of the effectiveness of the 'academy-class' training model on trainees' professional

development," *Theory Pract. Lang. Stud.*, vol. 9, no. 2, 2019, doi: 10.17507/tpls.0902.03.

[8] C. Zagouras, D. Egarchou, P. Skiniotis, and M. Fountana, "Face to face or blended learning? A case study: Teacher training in the pedagogical use of ICT," *Educ. Inf. Technol.*, vol. 27, no. 9, 2022, doi: 10.1007/s10639-022-11144-y.

[9] Y. Tsekhmister, "Effectiveness of Practical Experiences in Using Digital Pedagogies in Higher Education: A Meta-Analysis," *J. High. Educ. Theory Pract.*, vol. 22, no. 15, 2022, doi: 10.33423/jhetp.v22i15.5567.

[10] N. Pongsakdi, A. Kortelainen, and M. Veermans, "The impact of digital pedagogy training on in-service teachers' attitudes towards digital technologies," *Educ. Inf. Technol.*, vol. 26, no. 5, 2021, doi: 10.1007/s10639-021-10439-w.

[11] J. Wallace, D. Scanlon, and A. Calderón, "Digital technology and teacher digital competency in physical education: a holistic view of teacher and student perspectives," *Curric. Stud. Heal. Phys. Educ.*, 2022, doi: 10.1080/25742981.2022.2106881.

[12] S. Santoveña-Casal and S. R. López, "Mapping of digital pedagogies in higher education," *Educ. Inf. Technol.*, 2023, doi: 10.1007/s10639-023-11888-1.

[13] H. Coovadia and C. Ackermann, "Integrating digital pedagogies into a typical student learning lifecycle and its effect on exam performance," *Account. Educ.*, vol. 30, no. 1, 2021, doi: 10.1080/09639284.2020.1811993.

[14] E. V. Bryzgalina, D. A. Alekseeva, and E. D. Dryaeva, "Digital pedagogy: Experience of advanced training," *Vyss. Obraz. v Ross.*, vol. 30, no. 5, 2021, doi: 10.31992/0869-3617-2021-30-5-161-167.

[15] M. J. Koehler, P. Mishra, and W. Cain, "What is Technological Pedagogical Content Knowledge (TPACK)?," *J. Educ.*, vol. 193, no. 3, 2023, doi: 10.1177/002205741319300303.

[16] C. M. M. Dooley, T. Lewis Ellison, M. M. Welch, M. Allen, and D. Bauer, "Digital Participatory Pedagogy: Digital Participation as a Method for Technology Integration in Curriculum," *J. Digit. Learn. Teach. Educ.*, vol. 32, no. 2, 2016, doi: 10.1080/21532974.2016.1138912.

[17] L. Weisberg and K. Dawson, "The Intersection of Equity Pedagogy and Technology Integration in Preservice Teacher Education: A Scoping Review," *J. Teach. Educ.*, 2023, doi: 10.1177/00224871231182129.

[18] J. La Fleur and R. Dlamini, "Towards learner-centric pedagogies: Technology-enhanced teaching and learning in the 21st century classroom," *J. Educ. (South Africa)*, no. 88, 2022, doi: 10.17159/2520-9868/i88a01.

[19] J. Apak, M. S. Taat, and N. M. Suki, "Measuring teacher creativity-nurturing behavior and readiness for 21st century classroom management," *Int. J. Inf. Commun. Technol. Educ.*, vol. 17, no. 3, 2021, doi: 10.4018/IJICTE.20210701.oa4.

[20] A. GÖÇEN, S. H. ERAL, and M. H. BÜCÜK, "Teacher Perceptions of a 21st Century Classroom," *Int. J. Contemp. Educ. Res.*, vol. 7, no. 1, 2020, doi: 10.33200/ijcer.638110.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.