

## THEMATIC PAPER: APPRENTICESHIP

# Socio-ecological theory and apprenticeship systems

Eoghan Ó Murchadha<sup>1,\*</sup>, Róisín Murphy<sup>2</sup>

<sup>1</sup>Dún Laoghaire Further Education Institute, Dublin A96 EP44, Ireland

<sup>2</sup>TU Dublin Enterprise Academy, Technological University Dublin, Dublin D01 K822, Ireland

## Abstract

Apprenticeship as a paradigm may be regarded as a system consisting of inter-related stakeholders in a relatively complex but collaborative relationship. Societal phenomena such as this are suitable for analysis through the application of the theory of socio-ecology. While such studies have been undertaken to an extent in the past, the analyzes conducted have been limited in terms of socio-ecological strata used. Furthermore, such studies have generally analyzed apprenticeship within jurisdictions where training is extensive with few social partners involved. Conversely, this study analyzes apprenticeship in the context of the standardized Irish craft model where the number of key stakeholders involved is more expansive. Consequently, these stakeholders may be represented by a more thorough socio-ecological analysis utilizing levels including micro, meso, exo and macro systems as described by Bronfenbrenner in 1994.

## Keywords

apprenticeship, governance, socio-ecology, stakeholders

## INTRODUCTION

This article explores the application of socio-ecological theory to apprenticeship systems, using the Irish context for evaluation. Socio-ecological theory, rooted in the work of Bronfenbrenner (1994), conceptualizes society as a collection of interrelated systems. These systems, namely the microsystem, mesosystem, exosystem, macrosystem, and chronosystem, offer a multi-layered approach to analyzing social phenomena. The theory posits that ecological problems are deeply intertwined with social issues, necessitating a comprehensive understanding of societal structures to address these challenges effectively (Bookchin, 2006). The socio-ecological paradigm provides a robust framework for understanding the complex interplay between societal structures and individual behaviors.

### *Background and rationale*

Traditionally in Ireland, an ad-hoc system of time-served training was the only apprenticeship model. Consequently,


registrations in apprenticeships and on-the-job standards varied, with the only reliable component being the delivery of off-the-job education. To address this issue and to enhance the engagement of employers, in 1993, the national training authority implemented a new national apprenticeship model based upon achieving competence over a set period. This new training paradigm known as the Standards Based Apprenticeship (SBA) system, brought new governance and structure to apprenticeship. Twenty-six apprenticeships were established across families of trades, namely construction, electrical, engineering, motor and printing. All apprenticeships had the same entrance criteria and minimum duration. Since Ireland never operated apprenticeship at upper-secondary, this practice continued with entrance restricted to school leavers with a minimum attainment of the national Junior Certificate and aged between 16 to 26 years. Additionally, after successfully completing all phases of on- and off-the-job training, recipients would qualify with a national certificate in their trade placed at Level 5 on the European Qualifications

### \*Corresponding Author:

Eoghan Ó Murchadha, Dún Laoghaire Further Education Institute, Dublin A96 EP44, Ireland. Email: EOMurchadha@dfei.ie.

Received: 27 March 2025; Revised: 14 May 2025; Accepted: 15 May 2025

<https://doi.org/10.54844/vte.2025.0943>

 This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License, which allows others to copy and redistribute the material in any medium or format non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Framework (EQF).

Since its inception, the SBA has regulated craft apprenticeship training to great acclaim (O'Connor, 2003). The only drawback was the limited number of apprenticeships compared to other countries, with the majority of apprenticeships being related to the "trades", either directly or indirectly associated with the construction industry (Steedman, 2010). However, at its peak in 2005, the SBA had a very respectable population of circa 30,000 apprentices, given the limited number of apprenticeships. Moreover, the model was healthily renewing new apprentices annually with a peak of circa 28,500 in 2007.

However, the major international recession of the mid-2000s collapsed the Irish construction industry and due to its predominant association with construction, apprenticeship followed suit. The complete failure of the apprenticeship model to cope with economic downturn saw the apprenticeship population reduced by 76% by 2013.

During the recovery period of the Irish economy, the Irish government, in an attempt to expand apprenticeship into other areas of industry has established a new model of apprenticeship for new apprenticeships. This new format—a consortia-led model—was implemented in 2016. It differs from the SBA model in that it removes state responsibility as much as possible and, significantly, does not provide the payment of training allowances by the state to apprentices, as does the SBA. However, the new format removes age constraints to becoming an apprentice and significantly, allows apprenticeships to be placed anywhere on the EQF up to and including doctorate (EQF Level 8).

Ireland now operates two apprenticeship models, overseen by a new National Apprenticeship Office (NAO)—the SBA, now referred to as pre 2016 apprenticeships and the newer consortia-led model referred to as post 2016 or 2016+ apprenticeships. New apprenticeships now surpass the older model in number having been successfully developed across twelve new areas of industry including the Finance, information and communication technology (ICT), and Healthcare sectors. Though there are more 2016+ apprenticeships (52) than pre-2016 apprenticeships (25), their population as of year-end 2024 was significantly lower, at 4835 apprentices while SBA apprenticeships have a current craft apprentice population of 24,974 as of year-end 2024 (National Apprenticeship Office, 2025).

Due to the discrepancies between the two models, the government has recently decided to replace both pre and post 2016 training formats with a new unified model of apprenticeship called the New Single Integrated Appren-

ticeship System (Department of Further and Higher Education, Research, Innovation and Science, 2021). However, this has proven to be divisive, with many of the features of the new model being rejected by social partners.

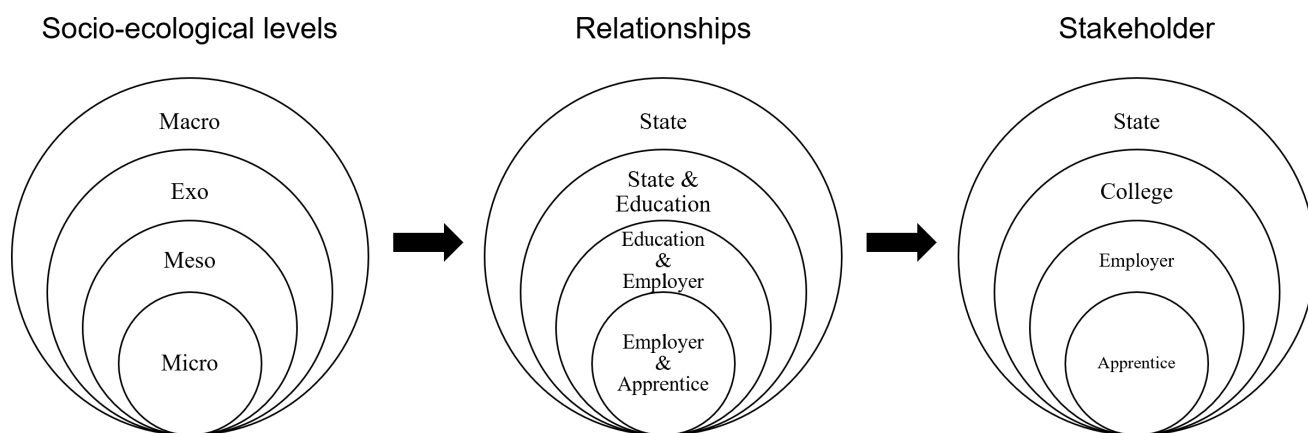
Crucially, the application of socio-ecological theory within the Irish context is particularly relevant given the nature of stakeholder engagement within apprenticeship systems. Additionally, the findings from this research are commonly applicable to other contexts due to the universal nature of stakeholder engagement in apprenticeship systems. This article examines the application of socio-ecological theory to apprenticeship systems, using the Irish context for evaluation.

## METHODS AND RESEARCH DESIGN

The research methodology is qualitative in nature, specifically, a desk-based study of extant literature on apprenticeship in the context of socio-ecology. Due to the dearth of literature on this subject within the field of education and the lack of application of full socio-ecological strata, it was decided to ground the methodology in the style of the most prominent socio-ecological model as articulated by Bronfenbrenner (1994).

Although the pre-eminent narrative on the format of apprenticeship is that of the International Labour Organization (ILO) in its definitive resource Toolkit for Quality Apprenticeship (ILO, 2017), stakeholder involvement in Irish apprenticeship is less diverse. ILO Tripartism refers to government, employers, and workers, with the last cohort represented by unions. However, key stakeholders to Irish apprenticeship also include educational bodies. While unions are an important social partner, they do not play an active role in the day-to-day administration of apprenticeship in Ireland. Employer input is now more extensive due to the 2016+ consortia-led model, where a lead employer is a mandatory requirement for each consortium.

Irish apprenticeship, and principally the SBA, is regulated by agreed roles carried out by key stakeholders at four principal levels, namely state, educational institutes, employers and apprentices, with little involvement by any other stakeholder. However, with the aim of a unified model of apprenticeship by Irish government, ILO recommendations will be particularly relevant. In particular, the ILO recommendation that quality apprenticeship is sustainable (ILO, 2023) should be of paramount consideration by the Irish government since the SBA model was seen to collapse under the recessive effects of economic cyclicity. This, in conjunction with extensive analysis via socio-ecological theory, would provide a modern and flexible paradigm of training.



**Figure 1.** Representation of socio-ecological levels. Adapted from Ó Murchadha (2022) and Bronfenbrenner (1994).

The socio-ecological model has been widely applied across various disciplines, including environmental sciences, economics, medicine, psychology, and the arts (Colding & Barthel, 2019). In the context of apprenticeship systems, the theory's ability to dissect social issues into multi-component inquiries makes it particularly valuable. This approach allows for nuanced investigations of sub-cohorts while maintaining a holistic view of the overall research theme.

Additionally, though Bronfenbrenner (1994) applied his theory principally to the field of human development, it has since been expanded as a tool of analysis to other contexts such as healthcare and agriculture (Kilanowski, 2017), education (Kersh et al., 2018; Walters & von Kotze, 2018) and industry and training (Gessler, 2017).

**Theory and systems**

Bronfenbrenner's socio-ecological model involves "nesting circles that place the individual in the centre surrounded by various systems" (Kilanowski, 2017). These systems are aligned to the stakeholder strata of Irish apprenticeship below along with summary descriptions as proposed by Bronfenbrenner (1994). (1) Microsystem: "*Activities experienced by the developing person*". This level represents apprentices' experience with the employer. (2) Mesosystem: "*Processes taking place between two or more settings containing the developing person*". This level represents apprentices' experiences with the employer and educational setting. (3) Exosystem: "*Processes taking place between two or more settings, at least one of which does not contain the developing person*". This level represents the educational settings and the state authority. (4) Macrosystem: "*Societal blueprint for a particular culture*". This level represents state policy.

Bronfenbrenner's model also includes, at its outer/highest level, the Chronosystem. In this example it is chosen not to use the chronosystem as it is more applicable to a study of change over time.

Figure 1 shows the stages of application of the socio-ecological model to the key stakeholder arrangement of Irish apprenticeship. As can be seen, a single key stakeholder emerges as representative of each stratum. It is, therefore, much easier to examine the inter-relationships between strata and perceive a descriptive model.

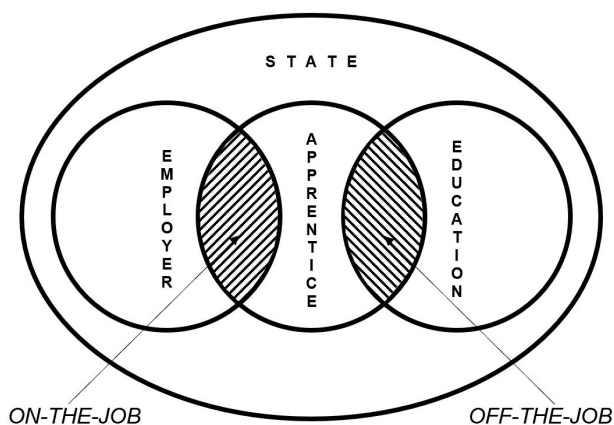
**KEY FINDINGS**

The socio-ecological model provides a comprehensive framework for understanding the complex interrelationships that influence apprenticeship outcomes. The interactions between stakeholders at different levels of the socio-ecological model offer valuable insights for policymakers, educators, and industry stakeholders.

The arrangement as shown in Figure 1 of nesting circles is more applicable if understood to be sets within a Venn Diagram. Accordingly, each set may be interpreted as being a subset of that above it, thereby demonstrating that all sets are in some way interrelated. Consequently, it can be seen that the interactions between the "sets" are not linear. Moreover, relationships between exo, meso and micro levels in particular, are not static, due to the structural behavior, *i.e.*, inter-relations of a dual-based apprenticeship system.

In terms of the Venn Diagram paradigm, Figure 2 displays Irish apprenticeship stakeholders as a socio-ecological

construct. The findings highlight that there is current evidence to suggest the widespread application of socio-ecological theory across various disciplines. These include: (1) The importance of supportive relationships at the microsystem level in enhancing apprenticeship experiences. (2) The need for strong partnerships between employers and educational institutions at the mesosystem level. (3) The significant impact of government policies and industry regulations at the exosystem level. (4) The influence of cultural and societal norms at the macrosystem level in shaping apprenticeship systems.



**Figure 2.** Relationship of stakeholders to Irish apprenticeship. Reuse from Ó Murchadha (2022).

As can be seen in the model above, the concatenation of stakeholders is non-linear. The apprentice at the centre is subject to individual relationships with employers and educators. These intersections clearly represent on-the-job and off-the-job training, respectively. Furthermore, as each stakeholder is subject to macro level policy, they are consequently subsets of the state.

**CONCLUSION**

In conclusion, socio-ecological theory provides a robust framework for understanding the complex interplay between societal structures and individual behaviors within apprenticeship systems. The application of this theory offers valuable insights for policymakers, educators, and industry stakeholders.

The findings suggest that policymakers should consider adopting a socio-ecological approach to understand and improve apprenticeship systems. Particularly given the aim of the Irish government to create a new single apprenticeship model, policymakers should be cognisant of the influence of cultural and societal norms at the macrosystem

level and how these play a significant role in shaping apprenticeship systems.

As the Irish Government intends to develop a single unified model of apprenticeship, it would benefit greatly from being cognisant of the socio-ecological influences affecting stakeholders. Governments tend to be led by solutions that appear to benefit the state by improving labor market participation. While this is true, it is clear that different stakeholders are affected in different ways by issues such as non-engagement and cyclical elasticity.

It is, therefore, recommended that state policymakers consider the following recommendations in development of a quality apprenticeship model. (1) Address cyclical elasticity: Implement mechanisms to stabilize apprenticeship engagement despite economic fluctuations. (2) Enhance employer incentives: Develop policies to reduce the burden on employers and encourage investment in apprenticeship training. (3) Improve educational standards: Ensure high-quality training and assessment methods that meet industry needs. (4) Promote societal value: Increase the societal standing of apprenticeship as a viable and respected career path.

These recommendations address the key issues at each of the socio-ecological strata and represent actionable strategies for enhancing apprenticeship outcomes. By fostering and encouraging collaboration among all stakeholders, barriers to engagement may be overcome and quality apprenticeship for the benefit of all be achieved.

**DECLARATIONS**

*Acknowledgments*

None.

*Author contributions*

Ó Murchadha E, Murphy R: Writing—Original draft, Writing—Review and Editing. Both authors have read and approved the final version of the manuscript.

*Funding*

This research received no external funding.

*Ethical approval*

Not applicable.

*Informed consent*

Not applicable.

*Declaration of conflicting interests*

The authors have no conflicts of interest to declare.

**Generative AI use declaration**

None.

**Data availability statement**

No additional data.

**REFERENCES**

- Bookchin, M. (2006). *Social Ecology and Communalism*. AK Press UK.
- Bronfenbrenner, U. (1994). Ecological Models of Human Development. In *International Encyclopedia of Education* (Vol. 3, 2nd ed., pp. 1643-1647). Elsevier Sciences.
- Colding, J., & Barthel, S. (2019). Exploring the social-ecological systems discourse 20 years later. *Ecology and Society*, 24(1), 2. <https://doi.org/10.5751/ES-10598-240102>
- Department of Further and Higher Education, Research, Innovation and Science. (2021). *Action Plan for Apprenticeship 2021-2025*. DFHERIS.
- Gessler, M. (2017). The Lack of Collaboration Between Companies and Schools in the German Dual Apprenticeship System: Historical Background and Recent Data. *International Journal for Research in Vocational Education and Training*, 4(2), 164-195. <https://doi.org/10.13152/IJRVET.4.2.4>
- ILO. (2017). *ILO Toolkit for Quality Apprenticeships*. Geneva, ILO.
- ILO. (2023). *Quality Apprenticeship Recommendation 2023* (No. 208). ILO.
- Kersh, N., & Evans, K. (2018). Lifelong learning and VET: Towards understanding the influence of societal eco-systems on learning across the lifespan. In C. Nagele, B. E. Stalder, & M. Gessler. (Eds.), *Vocational education and training across the lifespan. Report on the VETNET research workshop during the third EU Vocational Skills Week* (pp. 21-27). <https://doi.org/10.5281/zenodo.2653539>
- Kilanowski, J. F. (2017). Breadth of the socio-ecological model. *Journal of Agromedicine*, 22(4), 295-297. <https://doi.org/10.1080/1059924X.2017.1358971>
- National Apprenticeship Office. (2025). *Apprenticeship as part of our National Infrastructure, Generation Apprenticeship Partners Meeting*. NAO.
- O'Connor, L. A. A Socio-Technical Analysis of the Standards Based Apprenticeship in Ireland: A case study of the construction industry. University of Leicester (Thesis). 2003.
- Ó Murchadha, E. (2022). A Socio-Ecological, Multi-Stakeholder Investigation of Apprenticeship Training Engagement in the Irish Construction Industry. Technological University Dublin (Thesis). 2022. <https://doi.org/10.21427/MDPJ-PH70>
- Steedman, H. (2010). *The State of Apprenticeship in 2010, A CEP Report for the Apprenticeship Ambassadors Network*. The London School of Economics and Political Science.
- Walters, S., & von Kotze, A. (2018). If you can't measure it, it doesn't exist? Popular education in the shadows of global reporting on adult learning and education. *Studies in the Education of Adults*, 51(1), 1-11. <https://doi.org/10.1080/02660830.2018.1522052>