

Nursing OER Environmental Scan: Summary Report

Prepared by the Nursing OER Environmental Scan Team for eCampusOntario

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Acknowledgements:

We would like to acknowledge Kyle Mackie for sharing the template for this report, along with the survey instrument adapted to collect information about existing nursing OERs.

The **Open at Scale Nursing OER Tracking Spreadsheet** can be found at:

http://bit.do/OAS_Nursing_OERs

Introduction

About the Project

As part of eCampusOntario's 'Open at Scale' initiative, a team from the University of Windsor and Western University conducted an environmental scan of nursing-related open educational resources (OER). This environmental scan aimed to identify existing or soon-to-be released nursing OER that can be adopted or adapted for nursing courses delivered by post-secondary institutions based in Ontario, Canada. It also aimed to surface gaps in the existing OER landscape as potential targets for future strategic OER development initiatives.

eCampusOntario, with input from stakeholders in nursing education, aim to advance the use and development of OERs in nursing education. This environmental scan aims to inform the following:

- Modular development to support maximum flexibility and reuse
- Integration of leading technology to support learning
- Development of additional resources to support teaching

A key goal of this initiative is to identify and recommend openly-licensed textbooks and ancillary resources for adoption and/or adaptation by university and college nursing programs. Additionally, this scan aims to highlight gaps and opportunities for future development of open resources.

This report consists of a description of the methodology for the environmental scan project, a summary and analysis of findings, and recommendations for next steps.

Timeline

This project commenced March 1, 2019 and the environmental scan was completed March 30, 2019.

Research Team

Project Leads

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Contact Information

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- All original materials related to this project (including this *Summary Report*, the ‘*Open at Scale*’ *Nursing OER Environmental Scan Tracking Spreadsheet*, and any other materials), are licensed under a [Creative Commons Attribution International 4.0 license \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).

Methodology

Approach to Focusing the Search

The core environmental scan team generated a list of possible approaches to identifying nursing OERs, including identifying a list of common nursing topics from foundations of nursing texts and other sources, and brainstorming with nursing educators. Given the timeframe available and the likely variation in teaching approaches and foci across the province, it was

decided that the most appropriate approach was to focus on the required College of Nurses Ontario (CNO) [Entry to Practice Competencies](#) (ETP). These are the competencies in which graduates must demonstrate performance in order to enter the profession, as well as maintain competence to practice as registered nurses in Ontario.

The CNO ETP competencies consist of five organizing competencies, and 100 detailed competencies.

Survey

The research team decided it would be valuable to survey librarians, instructional designers, faculty, and OER advocates to identify: (a) whether other nursing OER environmental scans had been conducted; (b) the core repositories practitioners use to find and locate post-secondary nursing OER; and (c) any new nursing-related OER in development. This practice was consistent with the parallel Open at Scale in Business project conducted by Kyle Mackie Consulting and was partially undertaken to harmonize these approaches. The business OER environmental scan team developed a short survey, which was shared with the nursing OER team and adapted for the purposes of this environmental scan. Consequently, a short survey was developed and distributed to the following channels on February 19th and 20th, 2019.

- Society for Teaching and Learning in Higher Education ([STLHE](#)) listserv
- Professional and Organizational Development Network ([POD](#)) listserv
- Ontario Universities Council on eLearning ([OUCEL](#)) listserv
- Nursing lists
- BCcampus' [Canada OER listserv](#)
- [Ontario's LIBOER listserv](#)
- Ontario Council of University Libraries ([OCUL](#)) listserv
- Social media (Twitter and LinkedIn)

The survey received 21 responses. The survey asked respondents:

Part 1: if they knew of pre-existing nursing-related OER scans. None of the respondents indicated any knowledge of pre-existing scans.

Part 2: to identify repositories/sources they used to locate OERs. The responses helped the research team determine a list of target repositories to search for nursing-related OER.

Part 3: to identify if they knew of any soon-to-be published nursing OER that the research team could add to their environmental scan documentation.

None responded that they knew of any soon-to-be-published nursing OER.

The nursing OER scan team added an additional section:

Part 4: identify any existing OERs that educators had found, knew of, or considered useful in their teaching. None of the respondents provided any resources in this section, but two respondents added a number of resources in an open ended question at the end of the survey. These were subsequently added to the spreadsheet.

Target Repositories for Nursing-related OERs

[Archive.org](#)

[AU Press](#)

[BCCampus Open Textbooks](#)

[Canadian Association of Schools of Nursing \(CASN\)](#)

[Community of Online Research Assignments \(CORA\)](#)

[Directory of Open Access Books \(DOAB\)](#)

[eCampusOntario \(Open Resource Catalogue\)](#)

[InTechOpen](#)

[Khan Academy](#)

[Libre Texts](#)

[Lippincott NursingCentre](#)

[Mason OER Metafinder](#)

[MERLOT](#)

[MIT OpenCourseWare](#)

[OASIS](#)

[OER Commons](#)

[Open Course Library](#)

[OpenLearn \(Open University UK\)](#)

[Open Michigan](#)

[Open NYS \(SUNY & CUNY\)](#)

[Open Oregon Educational Resources](#)

[OpenStax](#)

[Open Textbook Library](#)

[Saylor Academy Open Textbooks](#)

[Shareable Online Learning Resources \(SOL*R\)Skills Commons](#)

[Springer Open](#)

[SUNY OER](#)

[SUNY Open Textbooks](#)

[Teaching Commons](#)

[UCI Open](#)

[University of Edinburgh Open Ed](#)

[University of Minnesota Open Textbooks](#)

[University of Regina Open Textbooks](#)

[University of West Florida](#)

[Virginia Tech Open Textbooks](#)

[Youtube / Vimeo](#)

Target Resource types and licenses

The research team focused on 10 resource types:

- Open textbooks
- Open modules
- Quiz banks
- Open courses
- Online videos
- Slide decks

- Scenarios/simulations/case studies
- Interactive modules
- Websites
- Other

Resources sometimes crossed over two or more categories and this was noted in qualitative descriptions. Resources were evaluated by nursing educators as either **suitable as-is, requiring adaption**, or **unsuitable** for teaching registered nurses. They were also tagged as being **introductory, intermediate, or advanced** (see Appendix A for process and definitions).

While the focus was on Creative Commons (CC) licensed materials, other resources were also recorded. The following licenses were noted:

- Public domain
- CC BY
- CC BY-SA
- CC BY-NC
- CC BY-NC-SA
- CC BY-NC-ND
- Other CC
- GNU
- Open source / Open Access
- No license
- Restricted / copyright

Scan

Mining key repositories and mapping competencies

The five CNO organizing competencies were divided between the sites at Windsor (Knowledge-based practice; Ethical practice) and Western (Professional responsibility and accountability; Self-regulation; and Service to the public), with their associated detailed competencies. The research teams searched the identified repositories using the predetermined categories in the repository's search feature, for example, including categories such as 'nursing', 'medicine', 'health care' etc. depending on the level of granularity in the predetermined categories in each repository's search form. In addition, a keyword search was conducted with terms taken directly from the competencies and associated terms. This provided an opportunity to capture any resources that were not indexed in the repositories' main categories.

As the research team added resources to the spreadsheet, they provided preliminary suggestions on the CNO organizing competencies, and individual detailed competencies potentially addressed in the resource. The second phase of review was undertaken by nursing educators and nursing graduate students. This involved evaluating the resource against the suggested competencies, providing an indication for which level the resource was suitable (beginning, intermediate, advanced), and whether it would require adjusting to be useable in the Ontario nursing education context.

Findings

Tracking

Using the methodology detailed above, the research team identified 355 nursing-related resources deemed suitable by nursing educators, including:

- 106 openly-licensed textbooks with various [Creative Commons licenses](#).
- 40 open modules, 41 interactive modules, and 28 open courses were identified
- 140 other resources (websites, videos, simulations, assignments, lecture notes, quiz banks, etc.)

The research team tracked their findings in the [Open at Scale Nursing OER Environmental Scan Tracking Spreadsheet](#).

Key points:

- The research team performed an initial surface-level review of the resources found. A detailed content review was outside of scope for this project, but the nursing educators on the team attempted to map all resources against the current organizing and detailed competencies mandated by the CNO.
- Given the various methods for cataloguing and describing OERs, some information around these resources is at times difficult to find, and challenging to verify. There were also some resources that were all rights reserved, but which the team determined were important nursing education resources. These are included as potential areas where there is a gap in the open resources, and as examples of the kinds of resources that would need to be developed to match the commercial resources currently available and in use by nursing educators.

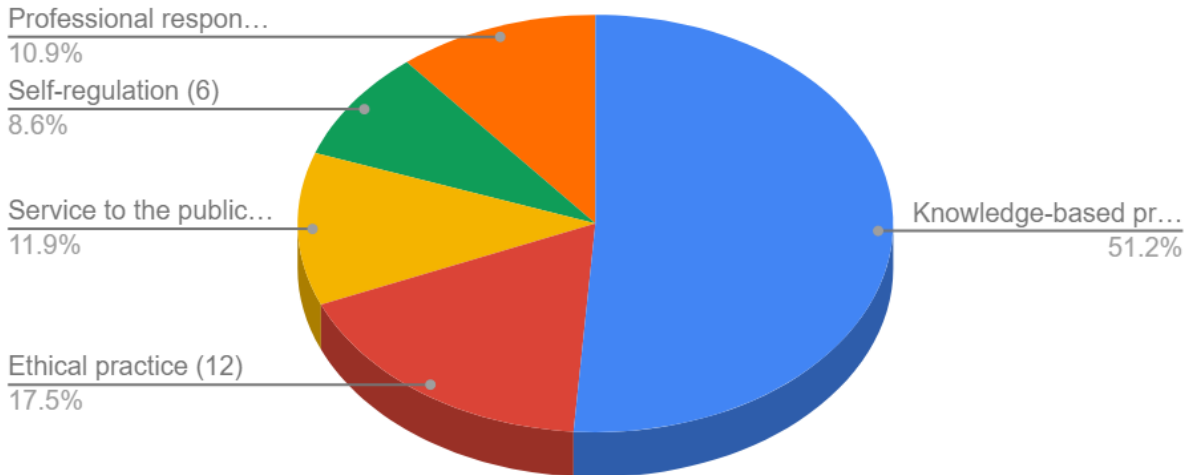
- While the focus was on finding materials that were CC licensed and editable, several potentially useful resources were discovered that could not be easily adapted because they carried licenses that did not allow adaptation, were not explicitly licensed, or had contradictory licenses applied in parts of the resource. This highlights one of the challenges for nursing faculty seeking open resources for inclusion in their curricula, particularly if they intend to adapt or modify the resource in any way, and is a separate issue from resources that are not able to be adaptable for technical reasons. A selection of non-adaptable or editable resources are included in the final spreadsheet as potentially useful resources in a repository of nursing-related materials, but can be filtered out as needed.

General Patterns

CNO Organizing Competencies

Figure 1 details the proportion of OERs found by alignment with the five CNO Organizing Competencies. The vast majority of OERs are aligned with the Knowledge-based Practice competencies. This is likely because the concepts underlying these competencies cross over several allied disciplines, such as anatomy, physiology, chemistry, pharmacology, microbiology and a number of other fields. While this content is readily available as OER, there are specialized nursing-focused approaches to teaching these concepts, so it will likely need adapting to be suitable. This is also reflected in the fact that the majority of detailed nursing competencies (51 out of 100) fall under this organizing competency. Ethical practice was also relatively well represented (and these resources tended to be specific to nursing contexts where found), but Service to the Public, Self-Regulation, and Professional Responsibility and Accountability competencies are all more specific in nature and thus had fewer resources associated with them. Also, while some of the material would be appropriate in these areas, adaptation and/or direction to fully utilize the resources may be needed.

Fig. 1. Distribution of OERs by alignment with CNO Organising Competencies



Audiences

The resources found were fairly evenly distributed across introductory, intermediate, and advanced levels. The majority of open texts found were considered either introductory or advanced for nursing students (a number of these were at the graduate level), with fewer at an intermediate level. This may in part be because there are a number of medicine and health-related resources published in open formats (for example, IntechOpen, Springer Open). These sometimes carry a No Derivatives (ND) license, which limits their utility for remixing, but could still make them useful as no-cost resources to be included in a package of resources.

Resource types

The majority of the resources found were in textbook format. Some of these texts include faculty resources such as case studies, video, presentation slides, test banks, sample assessments, sample syllabi, student handbooks with solutions, and activities. Most of these ancillary resources were standalone and not associated with a text.

Table 1. *Number of resources found in each resource category*

<i>Type of Resource</i>	<i>Number of resources found</i>
Case study	15
Interactive module	41
Online video	31
Open course	28
Open module	40
Open textbook	106
Other	37
Quiz bank	5
Scenario	5
Slide deck	1
Website	45
Grand Total	355

Approximately half of the resources were at introductory level, 30% at the intermediate level, and 20% at the advanced level.

Licensing

Figure 2 details the breakdown of the license types attached to OERs found in the Nursing OER Spreadsheet. Open Source/Open Access was the most common license, followed by CC BY-NC-SA and CC BY. Of note: a small percentage of resources found in the scan are licensed as “No-Derivatives” or all rights reserved, while others do not have a clear statement about licensing, or have contradictory licensing. Using these resources will present challenges and require careful vetting.

Fig. 2. Proportion of licence types across Nursing-related OERs

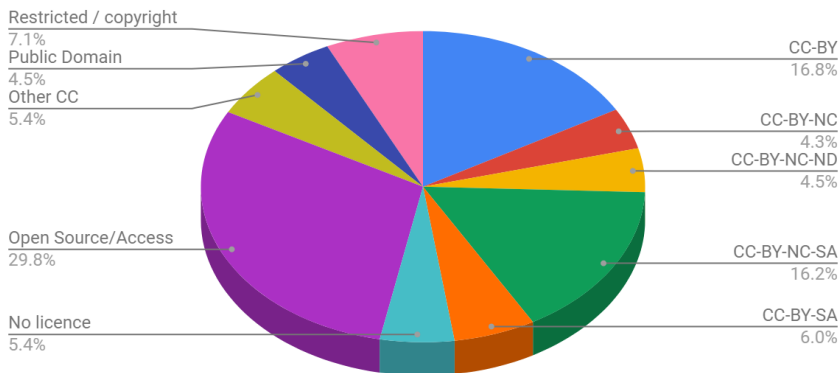
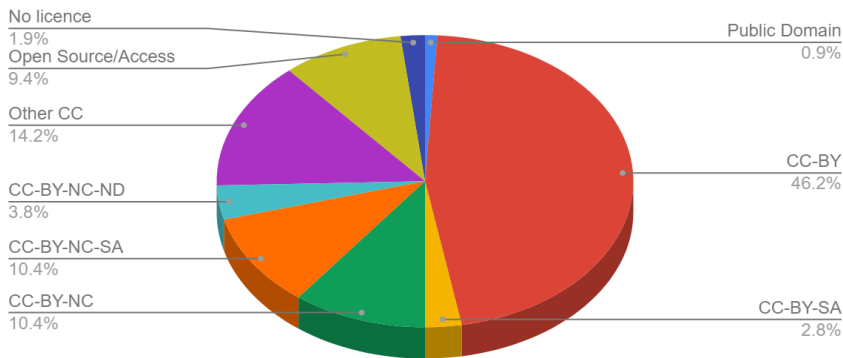


Figure 3 shows the same information broken out for textbooks only. The majority of open textbooks carried a CC BY license, which is promising for the ability to adapt and remix them. Again, a small proportion were licensed as No Derivatives (ND), but these are included as examples of content that may need to be created in an open format.

Fig. 3. Proportion of licence types across nursing-related open textbooks



Analysis

In the current data, recognizing that a detailed exploration of the resources was not possible in the timeframe, there are some trends which may inform the development of resources in the next phase of the Open at Scale project.

There are a wealth of resources covering competencies that fall under the Knowledge-Based Practice organizing competency (competencies 24-74). The majority of these resources are clustered around competencies 25-28, although competencies 25-42 and 59 are relatively well-covered as well. Competencies that fall under the Ethical Practice organizing competency (75-86) had fewer resources, but at least one resource for all but competency 75.

There are 16 competencies that currently do not have any resources mapped to them (possible reasons for this are discussed in the next section). This may change with a detailed examination of the resources provided in the Open at Scale Nursing OER Spreadsheet. The following detailed competencies do not have an associated resource as at time of writing: 3, 7, 12, 13, 14, 15, 16, 17, 51, 52, 53, 54, 72, 73, 74, 75, but many of them are taught through interprofessional activities, simulation, and clinical education.

Recommendations

Within the framework of the goals of the larger ‘Open at Scale’ project, and the specific needs related to nursing programs across Ontario, the research team makes the following recommendations and suggestions for next steps:

Using CNO Competencies as a starting point for filling OER gaps

The research team recommends addressing the gaps in content supporting the development of the required CNO competencies in nursing students as a useful way to focus efforts and provide value to the nursing education community.

The choice to use CNO competencies as a starting point for the environmental scan allowed for focus and related the resources to a set of standards with which all Ontario nursing programs are familiar and to which they must adhere. It was evident from the scan that there are numerous resources to support the scientific elements of nursing knowledge and practice, partly because these align with and draw from numerous disciplines.

Fewer resources exist for the competencies under Service to the Public, Self-Regulation, and Professional Responsibility and Accountability. We suggest that this is at least partly a result of these competencies dealing with complex and nuanced human factors that would more likely be effectively learned through clinical practice, but could be augmented with simulations, role-plays, scenarios and other learning activities that focus on concepts that focus on more complex higher order skills such as advocacy, policy, decision-making, leadership, critical

inquiry, and fitness to practice, to mention a few. Additionally, many are highly contextualized to the particular health care system within which the students will practice, so resources would need to be tailored to the various educational contexts. Furthermore, these competencies are founded on concepts that are more specific to the discipline of nursing than the basic science concepts in for example, anatomy, physiology, chemistry, or genetics.

Additionally, many of the competencies for which there are currently few or no open resources directly relate to elements of practice that are focused on knowledge, skills, and abilities evident in the practice settings. It may, therefore, not be feasible to consider developing resources for all competencies within the CNO framework. Resources that address multiple competencies could be considered, providing a more integrated view of practice. Working with nursing educators to determine what kinds of resources might promote best practices in these areas could be considered.

Encourage adoption and adaptation of open textbooks

Given the relatively high cost of commercial nursing textbooks (especially those that are by Canadian authors for a Canadian context), the preference to use textbooks as comprehensive supports for nursing courses, and large list of open textbooks available that are either suitable as is, or which could be modified relatively easily, the research team recommends that openly-licensed textbooks be considered as a starting point for development. Many of the open textbooks found were written specifically for nursing contexts, and some are even already developed for a Canadian context.

With that in mind, the following list of textbooks in Table 3 (in no particular order) may be considered as a good starting point for addressing many of the CNO competencies. Many of these recommended resources are already in eCampusOntario's open textbook library. Most may require some adaptation to the Ontario context.

Notable gap areas where open textbooks are not yet available as a comprehensive resource are a Canadian Foundations of Nursing text, Health Assessment, and Medical Surgical Nursing. Elements of these are covered in many of the open resources available, but not as a collated resource. Nursing ethics and professional practice from an Ontario perspective are also gaps in a comprehensive open resource.

Table 3. *Suggested open textbooks that may be adapted to nursing education in Ontario*

Title	URL
Vital Sign Measurement Across the Lifespan – 1st Canadian edition	https://openlibrary.ecampusontario.ca/catalogue/item/?id=c6b6aebc-9b95-41ef-9479-1fc54902504d
Medicines by Design	https://openlibrary.ecampusontario.ca/catalogue/item/?id=5db402f0-2b60-43b7-80d4-00af06d9e8a6
Microbiology	https://openlibrary.ecampusontario.ca/catalogue/item/?id=f3056d83-e290-46d7-b4c1-71646bc2f506
Organic Chemistry with a Biological Emphasis	https://openlibrary.ecampusontario.ca/catalogue/item/?id=5eb19909-44f1-490a-80f4-bb799a4a48bc
Anatomy & Physiology: OpenStax	https://openlibrary.ecampusontario.ca/catalogue/item/?id=89e10cae-3d8d-43f4-9a10-fe79fe1f3e8d
Handbook of eHealth Evaluation: An Evidence-based Approach	https://openlibrary.ecampusontario.ca/catalogue/item/?id=99a24fa3-4f68-4ce5-bc25-b7c62f74e674
Human Nutrition	https://openlibrary.ecampusontario.ca/catalogue/item/?id=c233f098-3c87-4eb2-9b34-9f00dcaa8675
Health Case Studies	https://openlibrary.ecampusontario.ca/catalogue/item/?id=67482da5-6523-45d1-8c31-0450711c8ead
Introduction to Psychology - 1st Canadian Edition	https://openlibrary.ecampusontario.ca/catalogue/item/?id=3805e950-ce2b-4300-bd23-2d9a6e462b72
Introductory Statistics: OpenStax	https://openlibrary.ecampusontario.ca/catalogue/item/?id=70aafbd0-33c9-4b35-a3e8-7dbca33307e1
The European Blood and Marrow Transplantation Textbook for Nurses: Under the Auspices of EBMT	http://www.oapen.org/search?identifier=1002163;keyword=nursing
A research handbook for patient and public involvement researchers	http://www.oapen.org/search?identifier=1001613;keyword=nursing
Homelessness & Health in Canada	http://www.oapen.org/search?identifier=515362
Care in Healthcare: Reflections on Theory and Practice	https://doi.org/10.1007/978-3-319-61291-1
Handbook of Life Course Health Development	https://doi.org/10.1007/978-3-319-47143-3
Rethinking Health Care Ethics	https://doi.org/10.1007/978-981-13-0830-7
Public Health Ethics: Cases Spanning the Globe	https://doi.org/10.1007/978-3-319-23847-0
Leadership and Influencing Change in Nursing	https://www.uregina.ca/open-access/open-textbooks/titles/nursing.html
Clinical procedures for safer patient care	https://openlibrary.ecampusontario.ca/catalogue/item/?id=a10c1fb8-d745-438a-8a21-c92c854abd11

High quality ancillary resources

Based on the analysis of the findings from this scan (types and number of resources available, competency alignment, complex nature of medical/health learning, etc), a key finding of this

project is the need for access to a range of high-quality ancillary learning materials in a variety of formats. These will augment the available openly licensed textbooks to provide parity with well-developed and established texts. Creating and adapting these resources demands significant effort from a team of experts, including subject matter experts, instructional designers, multimedia developers, web developers, editors, graphic designers and other specialists as needed. The research team recommends that institutional/organizational resources be dedicated to making accessible, appropriately-licensed resources and tools available to augment and localize openly-licensed textbooks.

Many areas of nursing knowledge, skills, and practice learning lend themselves to immersive, experiential, and complex learning environments. Scenarios, case studies (both written and interactive), videos, simulations, games, and augmented and virtual reality applications are all potentially effective learning supports for nursing education, and the scan shows that there are many of these types of resources available to nursing educators. Development of such resources is costly and time-consuming. We are also at a watershed in technology development where many excellent learning resources that were built in legacy tools such as Flash will no longer be available, and a decision about whether to rebuild those resources in alternative formats (H5P, HTML5 etc.) needs to be balanced against the cost of building completely new resources.

A note on the environmental scan process

The research team would like to acknowledge how valuable the process of systematically searching for open content in the discipline was to them personally. The process exposed the team to repositories, resource types, search functions and tools that most had not encountered before. The team was necessarily interdisciplinary, working remotely across two field sites and under very tight deadlines. The team involved nursing educators, librarians, open education specialists, and importantly, students. The student perspective demonstrated how and where students seek out additional learning resources, an insight that is not often explicitly available to faculty teaching in the discipline. We would strongly recommend that this mix of experience and specialty knowledge is a very valuable component of any such team.

The tight timelines also introduced some significant challenges in finding and vetting resources, and the results of this scan should be taken as an indicator of what is available, rather than an exhaustive list. It is our hope that the results of the scan will be widely available as a starting point for nursing educators in the province who may wish to explore open

practice or simply augment their existing teaching with resources of varying size and complexity. It is our belief that the diversity of resource types available to augment nursing education is a strength and important in making broader systemic change by meeting educators' needs. Repositories like [Open Michigan](#), which cluster OERs by discipline and topic in a logical, easy-to-use way, in the form of a course or module with easy to determine individual licenses for each element of the module, may provide a useful model for how open nursing resources may be made more easy to adopt and adapt. Interestingly, the repository also houses open data, open publications, and provides easy access to common third party open content.

Appendix A: Manual for Completing “Open at Scale Nursing OER Environmental Scan Tracking Spreadsheet”

(Adapted from Kyle Mackie Consulting’s “Manual for Completing Open at Scale Business OER Environmental Scan Tracking Spreadsheet”)

Data Entry Protocols

1. OER/Resource Title

- Title as it appears on the publisher’s website.

2. Link to OER

- Link to the landing page for the OER. Where the resource is stored in another repository, provide link to actual resource as well. Wherever possible, provide DOI as well.

3. OER author(s)

- Enter this field as: Last name, First name. Example: Welch, Florence.
- If there are multiple authors, separate with a semicolon. Example: Welch, Florence; Haines, Emily.
- If first name is unavailable, use first initial. Example, Welch, F.

4. Type of resource

- Use the drop down list to indicate resource type
- Where multiple resource types are found at the URL, indicate this in the comments
- New resource types may be added to the Definitions sheet, but the data validation then needs to be updated for the resource type column; do not type new resource types into the Resource type column

5. Publisher / Repository

- Provide any available information on the publisher and/or repository for the OER.

6. Reviews

- If there is evidence of peer review, indicate this.

- Where a link to the reviews is available, add this to the sheet

7. Platform/Format/Language

- Record the platform the resource is housed in e.g. PressBooks, Youtube, DSpace
- Record all the formats the resource is provided in wherever possible e.g. XML, HTML5, Flash, Java, PDF, EPUB3 etc.
- Where possible, focus on formats packaged for download and modification (e.g. items embedded in a website may be useful, but access to the original modifiable files is more useful)

8. Date published

- Write the year of publication and, if applicable, the year of last revision.

9. Type of license

- Use the drop down menu to select the appropriate license type
- Where contradictory licenses exist on the site, or from the repository to the actual resource, note this in the comments
- Do not type other license types into this column – additional types can be added to the data validation range in the Definitions sheet
- If no explicit license is visible, this does not mean it is in the [Public Domain](#) and public domain does not mean it is freely available in a public search.

10. Organizing competencies

- Use your best judgement about which of the 5 CNO Organizing competencies are addressed in this resource; These will be checked by nursing educators

11. Detailed competencies

- Use your best judgement about which of the 100 CNO Organizing competencies are addressed in this resource
- Ensure your Organizing competencies and Detailed competencies are aligned (e.g. OC 2 covers competencies 24-74, but if you feel it also covers competency 75, then the OCs should be 2 and 3)
- These will be checked by nursing educators

12. Comments for reviewers

- Record anything you think the reviewers or potential users of this resource should know, including any issues you find or doubts you have about suitability

13. Suitability

- Estimate whether the resource can be used as-is, needs adjustment, or is unsuitable

14. Audience Level

- Data validation: Introductory, Intermediate, Advanced.
- Judgement can be used to determine the audience level for the OER
 - Indicators that the OER may be introductory: Use of words such as ‘beginner or introduction’ in the title of the OER. Table of contents that provides overviews of broad subjects.
 - Indicators that the OER may be intermediate: Resources will require some prior foundational knowledge to be understood; resource topics similar to 2nd/3rd year courses in typical nursing programs.
 - Indicators that the OER may be advanced: Narrow focus and scope of the OER. Applying seemingly advanced theoretical models. Often crossing over other health-related professions Presence of the word ‘advanced’ in the title.

15. Comments from reviewers

- This field can be used to capture any information that may be of use to other users of the environmental scan, or to eCampusOntario.