**Appendix A**

Impact of Information and Communication Technologies (ICT) on Students

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Impact of ICT on students** | | | | | |
| **Reference** | **Academic performance** | **Communication** | **Participation** | **Interaction and inclusion** | **Motivation and innovation** | **Safety and self-esteem** |
| Almeida et al. (2016) | ✓ |  |  |  | ✓ |  |
| Alotaibi & Almalki (2016) | ✓ | ✓ |  | ✓ |  |  |
| Altinay Aksal & Altinay Gazi (2015) | ✓ |  |  | ✓ |  |  |
| Artemova et al. (2021) | ✓ |  |  |  |  |  |
| Bari et al. (2013) | ✓ |  |  |  | ✓ |  |
| Compagno et al. (2016) | ✓ |  | ✓ |  | ✓ |  |
| Echevarría Sáenz (2014) | ✓ |  |  |  | ✓ |  |
| Eligi & Mwantimwa (2017) | ✓ |  | ✓ | ✓ | ✓ |  |
| Fernández Batanero (2018) | ✓ |  | ✓ | ✓ | ✓ |  |
| Galiano-Barrocal et al. (2015) | ✓ |  |  |  |  |  |
| García García & López Azuaga (2012) | ✓ |  |  | ✓ | ✓ | ✓ |
| Gonçalves & Ferreira (2021) | ✓ | ✓ | ✓ | ✓ | ✓ |  |
| Jee & Kwak (2019) |  |  | ✓ | ✓ |  |  |
| Lee et al. (2011) | ✓ |  |  |  | ✓ |  |
| Loiselle & Chouinard (2012) |  |  |  | ✓ | ✓ |  |
| Magyar et al. (2020) |  |  |  | ✓ |  |  |
| Muñoz Pérez & Cubo Delgado (2019) |  |  |  |  | ✓ |  |
| Ozdamli (2017) | ✓ | ✓ | ✓ | ✓ | ✓ |  |
| Palominos Bastias & Marcelo García (2021) |  |  |  | ✓ |  |  |
| Ribeiro & Moreira (2010) | ✓ |  |  |  |  |  |
| Siyam (2019) | ✓ |  |  |  |  |  |
| Tello Díaz-Maroto & Cascales Martínez (2015) | ✓ |  |  |  |  |  |
| Vico Linde (2019) | ✓ |  |  |  |  |  |
| Vladimirovna Arhipova & Sergeevna Sergeeva (2015) |  |  |  | ✓ | ✓ |  |
| Yeni & Gecu-Parmaksiz (2016) | ✓ | ✓ |  |  | ✓ |  |

**Appendix B**

Predictors of Digital Competence

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Predictors of digital competence** | | | | | | | |
| **Reference** | **Lack of training** | **Lack of access** | **Lack of specific training courses** | **Lack of self-efficacy** | **Ease of use** | **Attitude and motivation** | **Lack of institutional support** | **Lack of time** |
| Almeida et al. (2016) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |
| Alotaibi & Almalki (2016) | ✓ (Positive attitude) | ✓ | ✓ |  |  | ✓ | ✓ |  |
| Altinay Aksal & Altinay Gazi (2015) | ✓ |  | ✓ |  |  |  | ✓ |  |
| Artemova et al. (2021) | ✓ |  | ✓ |  |  |  |  |  |
| Bari et al. (2013) | ✓ |  | ✓ |  |  |  |  |  |
| Compagno et al. (2016) | ✓ |  | ✓ |  |  |  | ✓ |  |
| Echevarría Sáenz (2014) | ✓ (Positive attitude) | ✓ | ✓ |  |  | ✓ | ✓ |  |
| Eligi & Mwantimwaet al. (2017) | ✓ | ✓ | ✓ |  |  |  | ✓ |  |
| Fernández Batanero (2018) | ✓ | ✓ |  |  |  |  |  | ✓ |
| Galiano-Barrocal et al. (2015) | ✓ | ✓ |  |  |  |  |  |  |
| García García & López Azuaga (2012) | ✓ | ✓ |  |  |  | ✓ |  |  |
| Gonçalves & Ferreira (2021) | ✓ |  |  |  |  |  | ✓ |  |
| Jee & Kwak (2019) | ✓ |  |  |  |  |  |  |  |
| Lee et al. (2011) | ✓ |  |  | ✓ |  | ✓ | ✓ | ✓ |
| Loiselle et al & Chouinard. (2012) | ✓ |  | ✓ |  |  |  |  |  |
| Magyar et al. (2020) | ✓ |  | ✓ |  |  |  |  |  |
| Muñoz Pérez & Cubo Delgado (2019) | ✓ |  |  |  |  | ✓ |  |  |
| Ozdamli (2017) | ✓ (Positive attitude) | ✓ |  |  | ✓ | ✓ | ✓ | ✓ |
| Palominos Bastias & Marcelo García (2021) | ✓ |  | ✓ |  |  |  |  |  |
| Ribeiro & Moreira (2010) | ✓ | ✓ |  |  |  |  | ✓ |  |
| Siyam (2019) | ✓ (Positive attitude) | ✓ |  | ✓ | ✓ | ✓ |  | ✓ |
| Tello Díaz-Maroto & Cascales Martínez (2015) | ✓ |  | ✓ |  |  |  |  |  |
| Vico Linde (2019) | ✓ (Positive attitude) |  | ✓ |  |  | ✓ |  |  |
| Vladimirovna Arhipova & Sergeevna Sergeeva (2015) | ✓ |  |  |  |  |  |  |  |
| Yeni & Gecu-Parmaksiz (2016) | ✓ (Positive attitude) |  |  |  |  | ✓ |  |  |